Draft Environmental Impact Statement

Spaulding Turnpike Improvements

NHS-027-1(37), 11238

Newington to Dover

New Hampshire

July 2006

Volume 2

Federal Highway Administration

New Hampshire Department of Transportation

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Figure 1.2-1
Project Location Map

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- STUDY AREA BOUNDARY

EXIT 1	GOSLING ROAD / PEASE BOULEVARD
EXIT 2	FOX RUN ROAD
EXIT 3	WOODBURY AVENUE
EXIT 4	NIMBLE HILL ROAD / SHATTUCK WAY
EXIT 4N	MEDIAN TURNAROUND (DISCONTINUED IN 2005)
EXIT 5	WENTWORTH TERRACE (HILTON PARK)
EXIT 6	US ROUTE 4 / DOVER POINT ROAD

0 750 1500 Feet

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Figure 1.2-2
Project Study Area

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New Hampshire DOT
Department of Transportation
Bureau of Transportation Planning

Vanasse Hangen Brustlin, Inc.

Figure 1.3-1
Socio-economic Study Area

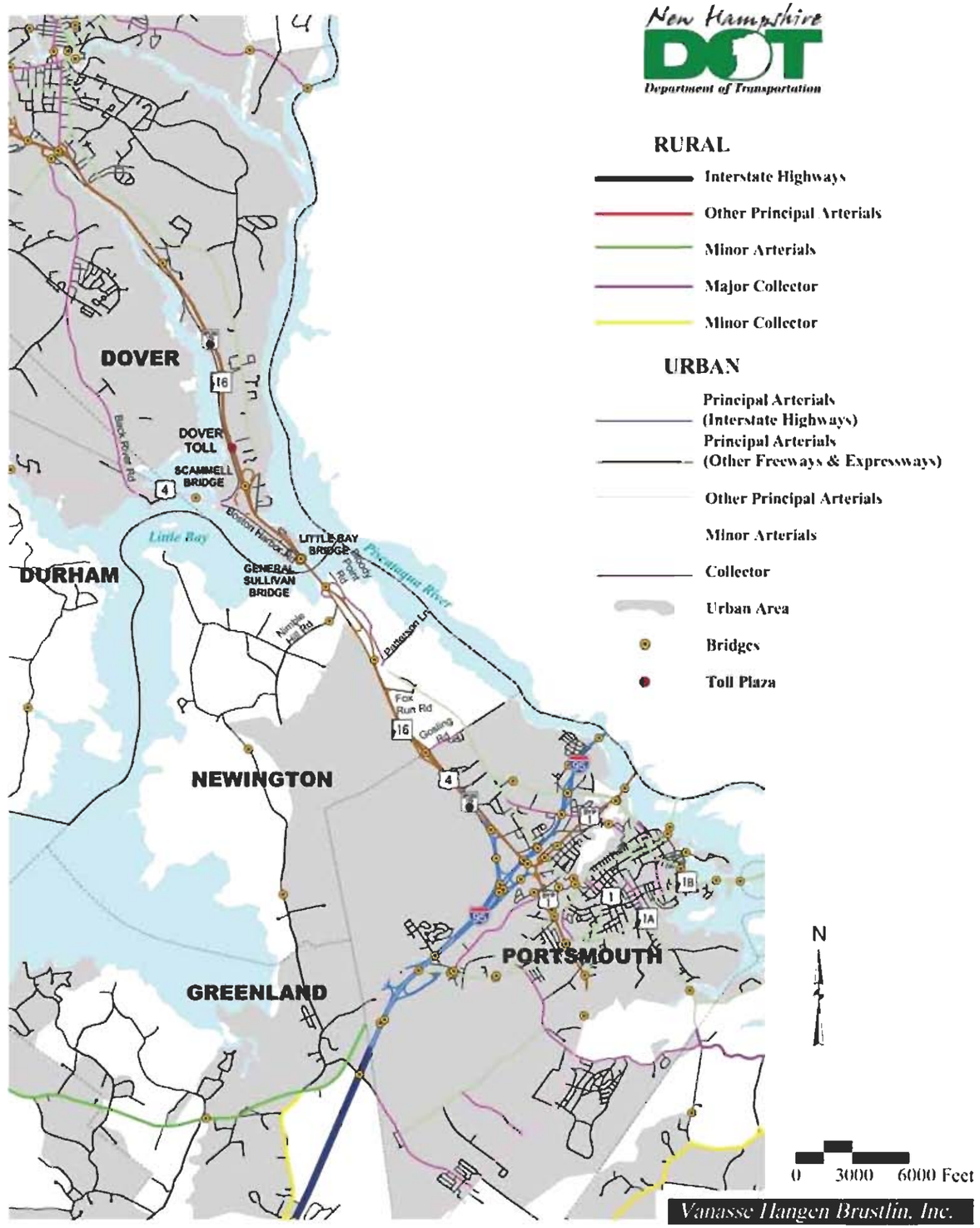
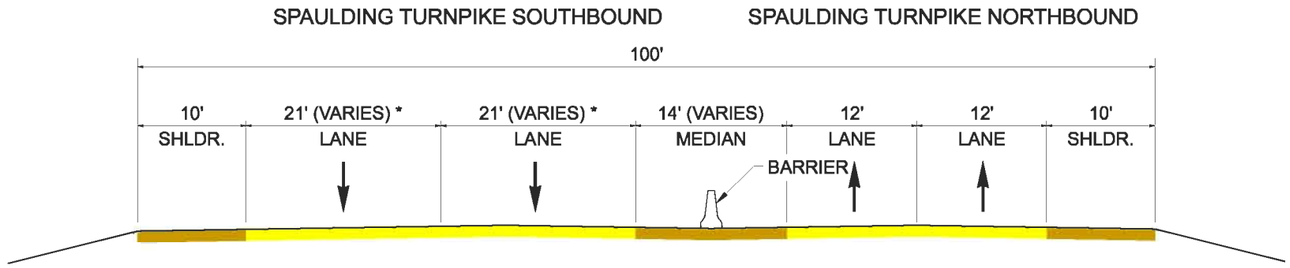
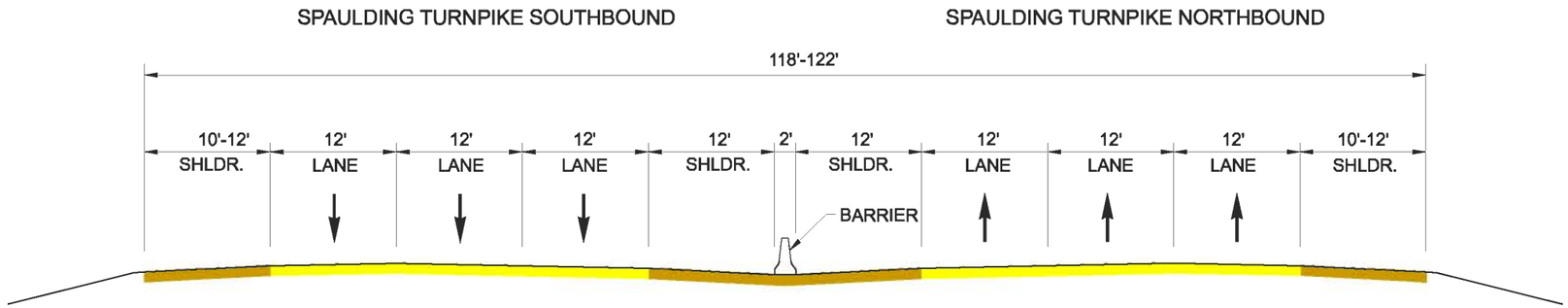


Figure 1.3-2
Functional Classification Map

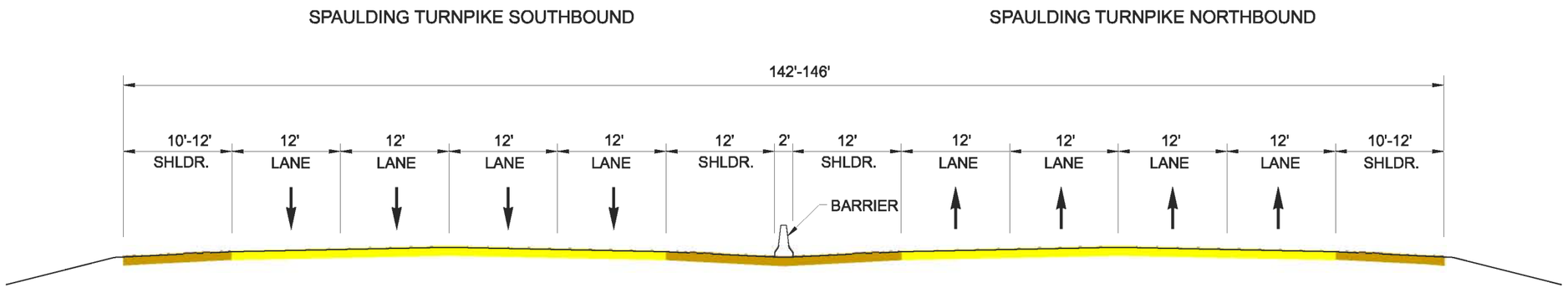


EXISTING FOUR - LANE ROADWAY CROSS SECTION (EXIT 5)

* TAPERS TO 12' APPROACHING BRIDGE



SIX - LANE TYPICAL SECTION



EIGHT - LANE TYPICAL SECTION

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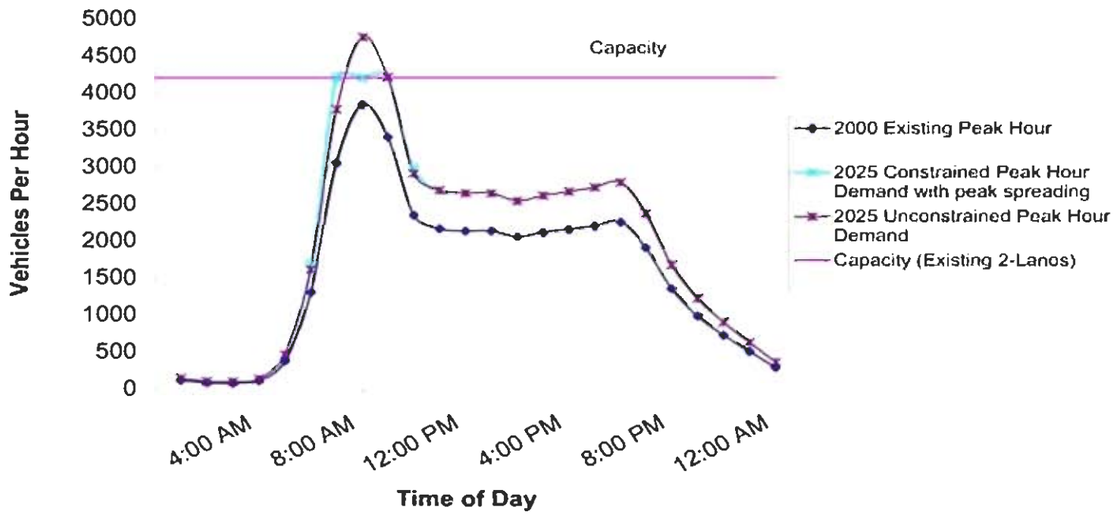
Figure 2.3-1
Typical Roadway / Bridge
Cross Sections

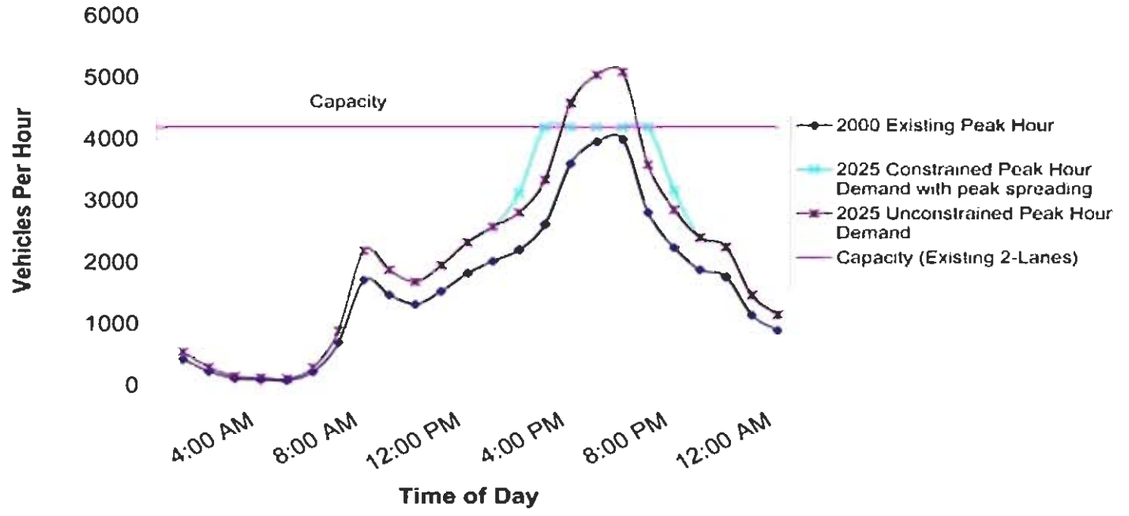
Figure 2.4-1
Temporal Distribution of 2000 and 2025 Average Weekday Traffic, Little Bay Bridges, Southbound



June 10, 2003

Vanasse Hangen Brustlin, Inc.
Temporal Distribution of 2000 and 2025 Average Weekday Traffic
Little Bay Bridges, Southbound
Figure 2.4-1

Figure 2.4-2
Temporal Distribution of 2000 and 2025 Average Weekday Traffic, Little Bay Bridges, Northbound



June 16, 2003

Vanasse Hangen Brustlin, Inc.
Temporal Distribution of 2000 and 2025 Average Weekday Traffic
Little Bay Bridges, Northbound
Figure 2.4-2

New Hampshire DOT
Department of Transportation

Legend:
- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Shoulder

BOSTON HARBOR RD

SPUR RD

SPAULDING TURNPIKE

400 '

Lengthen Exit 6W Deceleration Lane
By 400 Feet By Shimming and Re-Striping
Lane and Shoulder.

DOVER POINT RD

DOVER POINT RD

0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-3
Dover TSM
Exit 6, Northbound

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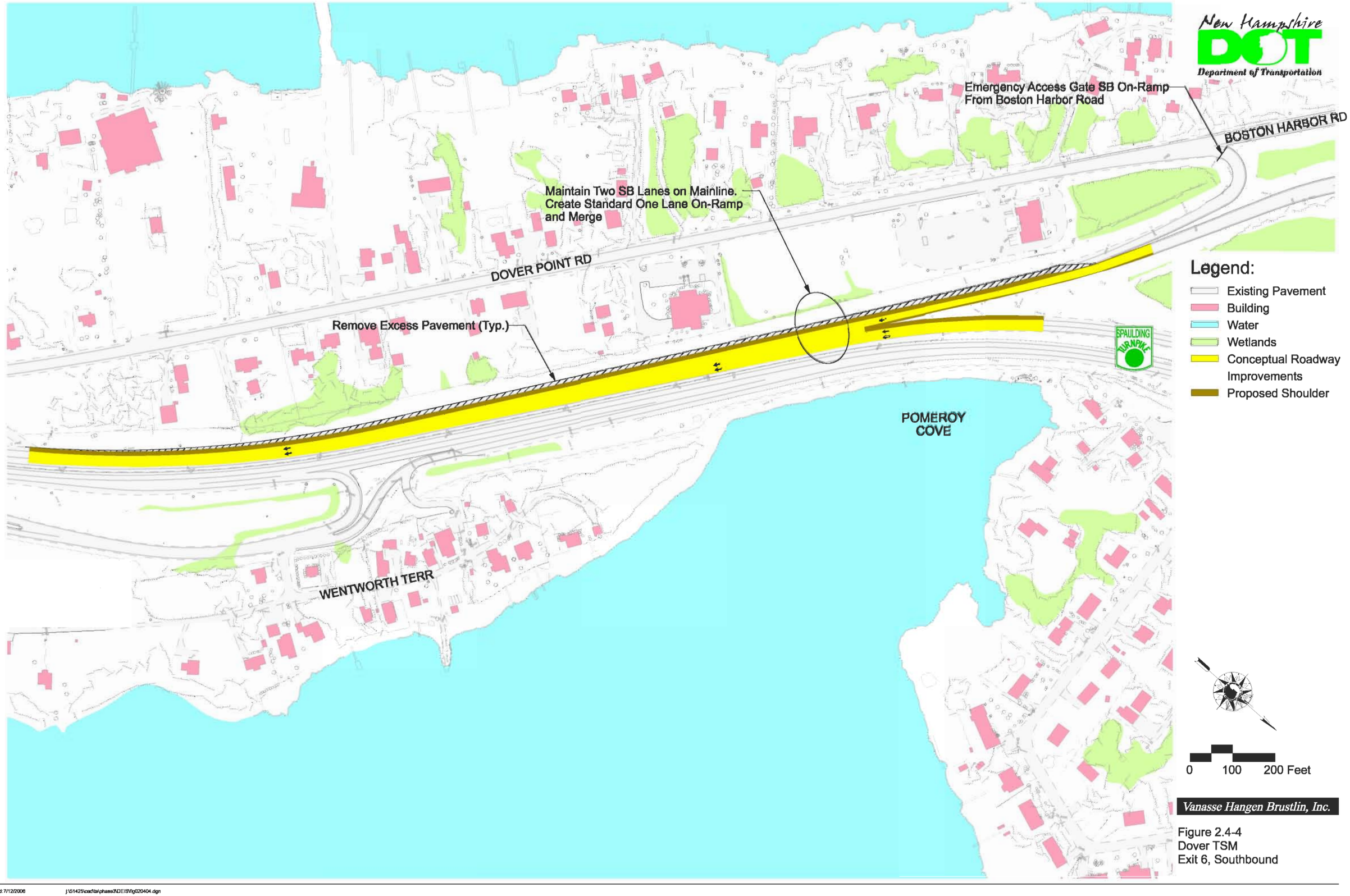

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Figure 2.4-4
Dover TSM
Exit 6, Southbound

(*) Note: Segments formerly known as River Road and River Road Extension now known as Shattuck Way

Proposed Work
Existing Pavement
Wetlands
Resurfacing / Driveway Improvements
Existing Buildings
Water
Buildings to be Removed
Pavement Removal

Newington
Interim Safety Improvements

Proposed Interchange Improvements
Exit 4 / River Road / Nimble Hill Road
Newington, New Hampshire
A000(115), 11238-C

New Hampshire DOT Department of Transportation

Figure 2.4-5

New Hampshire DOT
Department of Transportation

Exit 3

Restrict Access to Emergency Access (Gate) Only

Extend Parallel Exit 3 Southbound Deceleration Lane

WOODBURY AVE

NIMBLE HILL RD

SPAULDING TURNPIKE

Exit 4

Create Auxiliary Lane Northbound Between Exit 3 and Exit 4

SHATTUCK WAY

Signalize Proposed Interim Improvement Intersection To Meter NB On-Ramp Traffic (Future - If Necessary)

PATTERSON LN

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Shoulder

0 150 300 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-6
Newington TSM Options
Exit 3, Southbound and
Exits 3-4, Northbound

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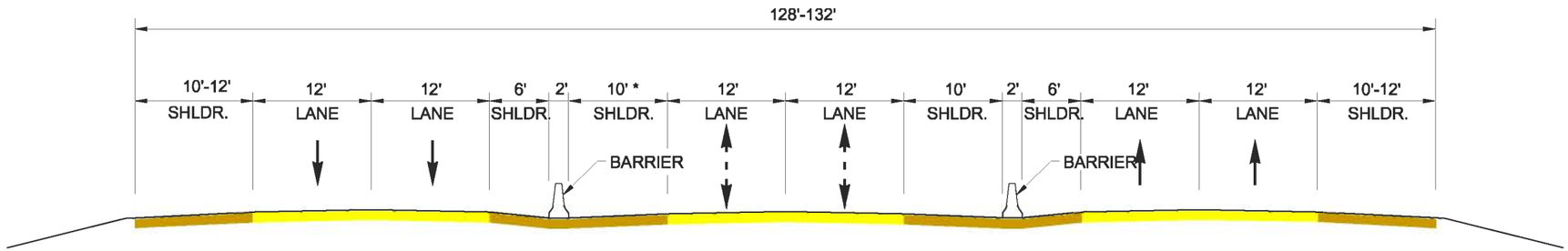
SPAULDING TURNPIKE SOUTHBOUND

SPAULDING TURNPIKE NORTHBOUND

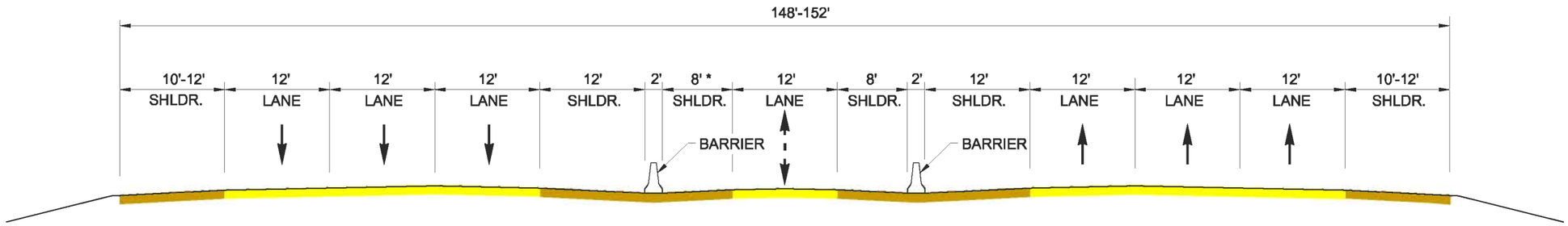


(* reduced typical 4')

SIX - LANE WITH TWO CONTRAFLOW HOV LANES TYPICAL SECTION

SPAULDING TURNPIKE SOUTHBOUND

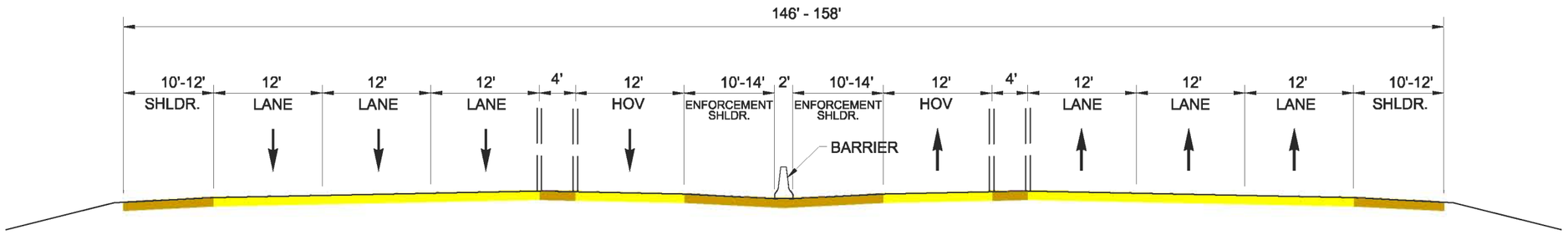
SPAULDING TURNPIKE NORTHBOUND



SEVEN - LANE WITH ONE CONTRAFLOW HOV LANE TYPICAL SECTION

SPAULDING TURNPIKE SOUTHBOUND

SPAULDING TURNPIKE NORTHBOUND



EIGHT - LANE WITH CONCURRENT HOV LANE TYPICAL SECTION

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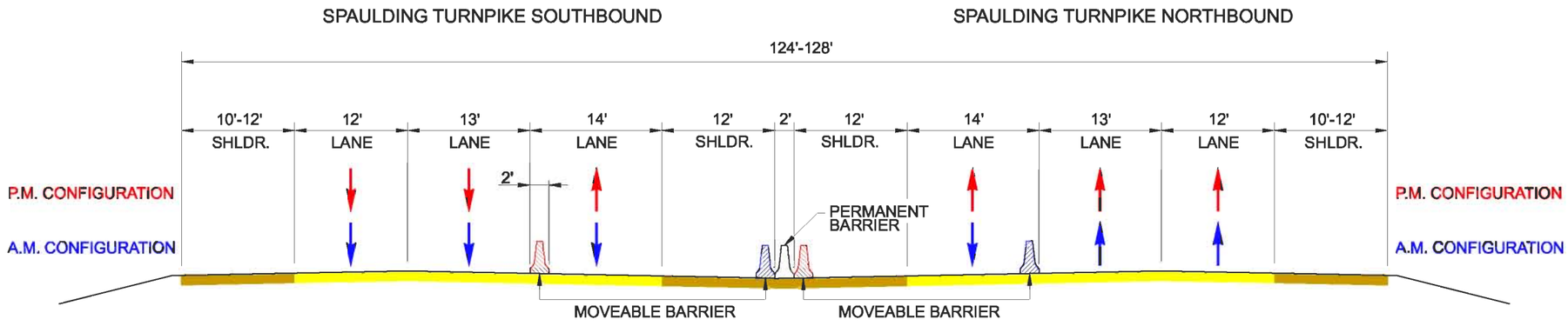
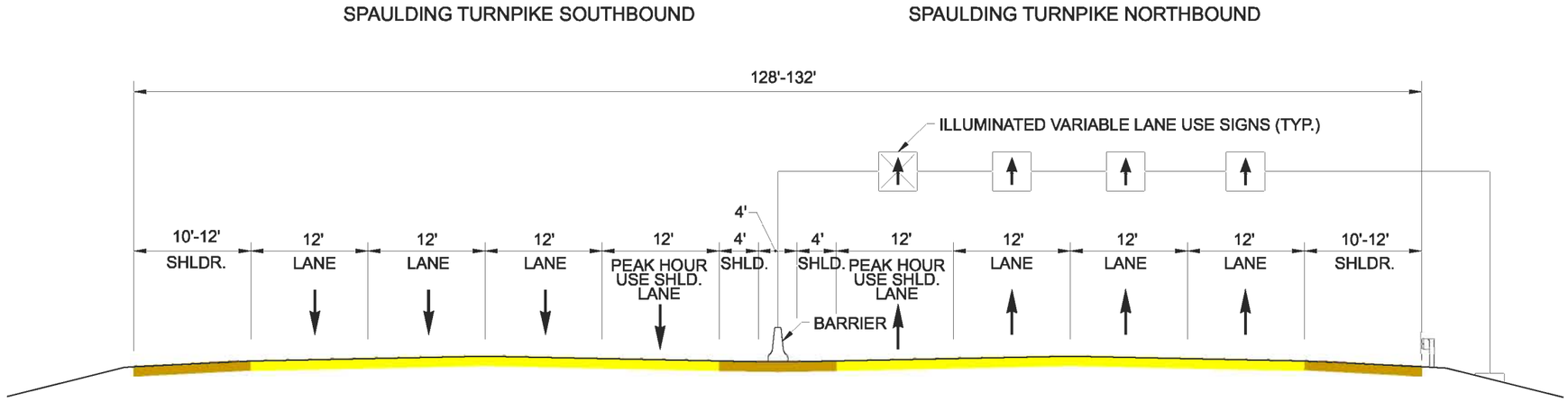
Figure 2.4-7
Six, Seven and Eight Lane HOV
Typical Section Alternatives



SIX - LANE WITH CONTRAFLOW (ZIPPER LANE) LANE TYPICAL SECTION



SIX LANE PLUS TWO PEAK HOUR USE SHOULDER LANES TYPICAL SECTION

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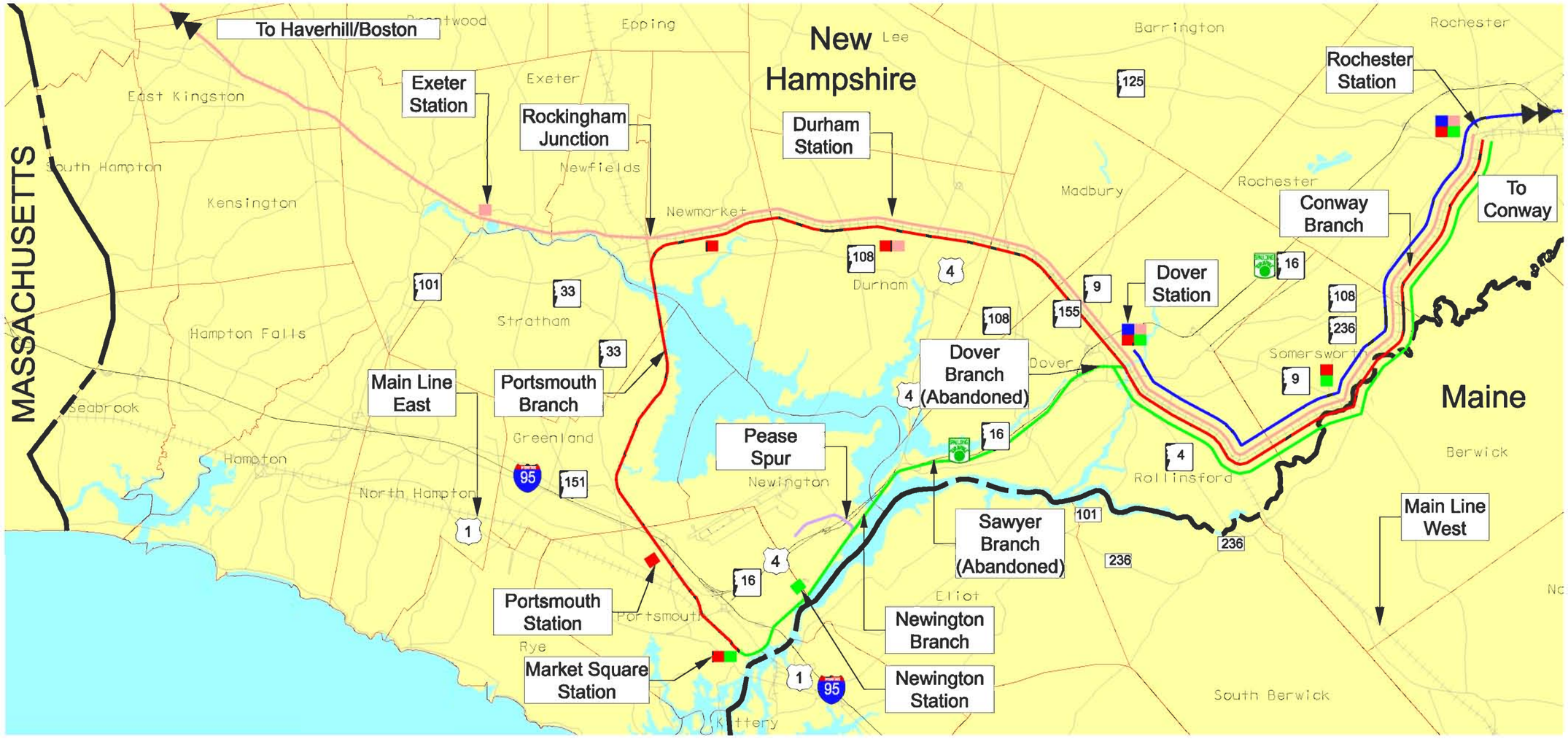
Figure 2.4-8
Six Lane Contraflow (Zipper Lane) and Six Lane Plus Two Shoulder Lanes Typical Section Alternatives

New Hampshire DOT
Department of Transportation



Legend:

- ALT. 1 Alignment/Station
  Expanded Downeaster Service
- ALT. 2A Alignment/Station
  Rochester-Portsmouth
  via Rockingham Junction
- ALT. 2B Alignment/Station
  Rochester-Portsmouth
  via Turnpike
- ALT. 3 Alignment/Station
  Conway Branch
- ALT. 4 Alignment
  Pease Spur

N

0 1.25 2.5 Miles

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Figure 2.4-9
Rail Alternatives

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New Hampshire DOT
Department of Transportation

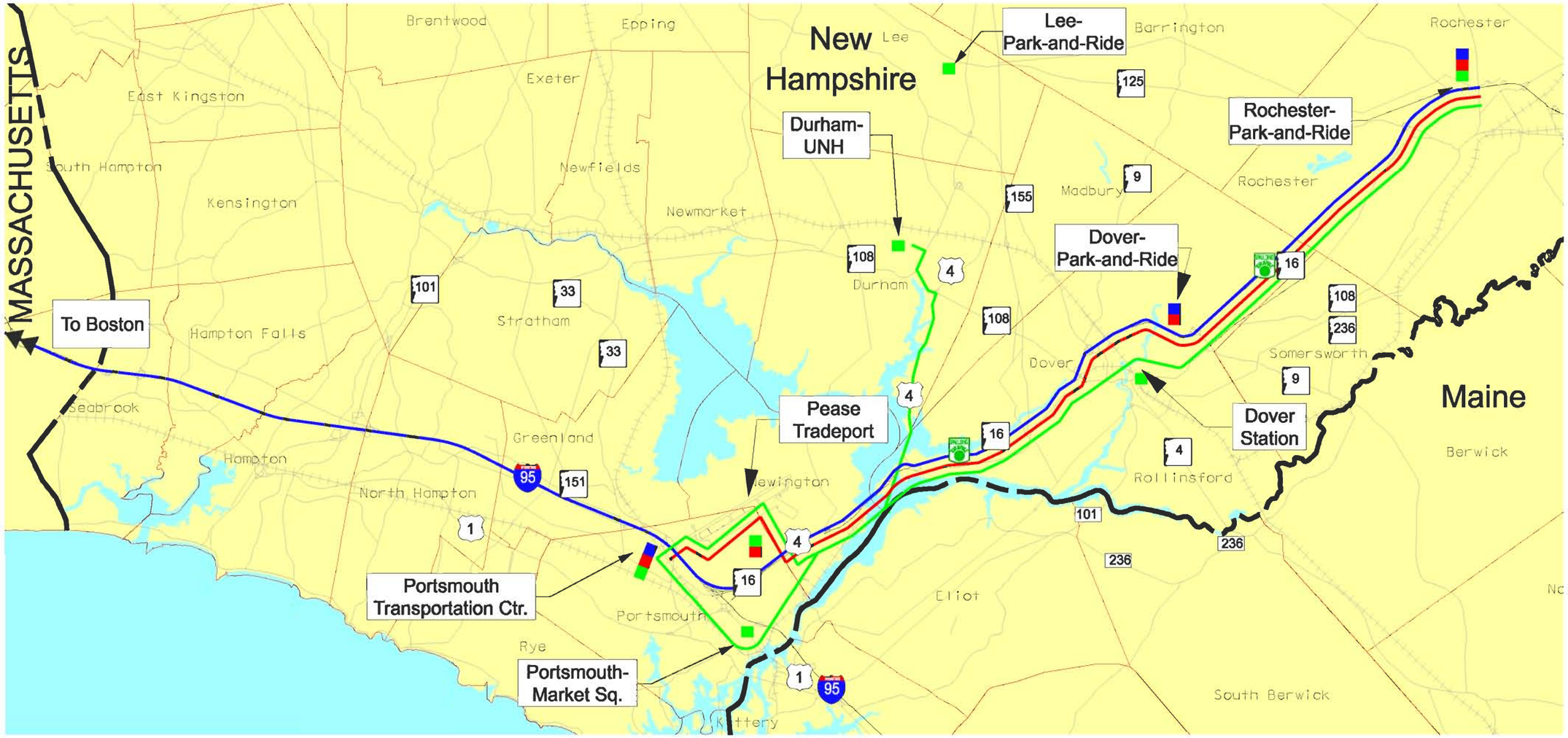

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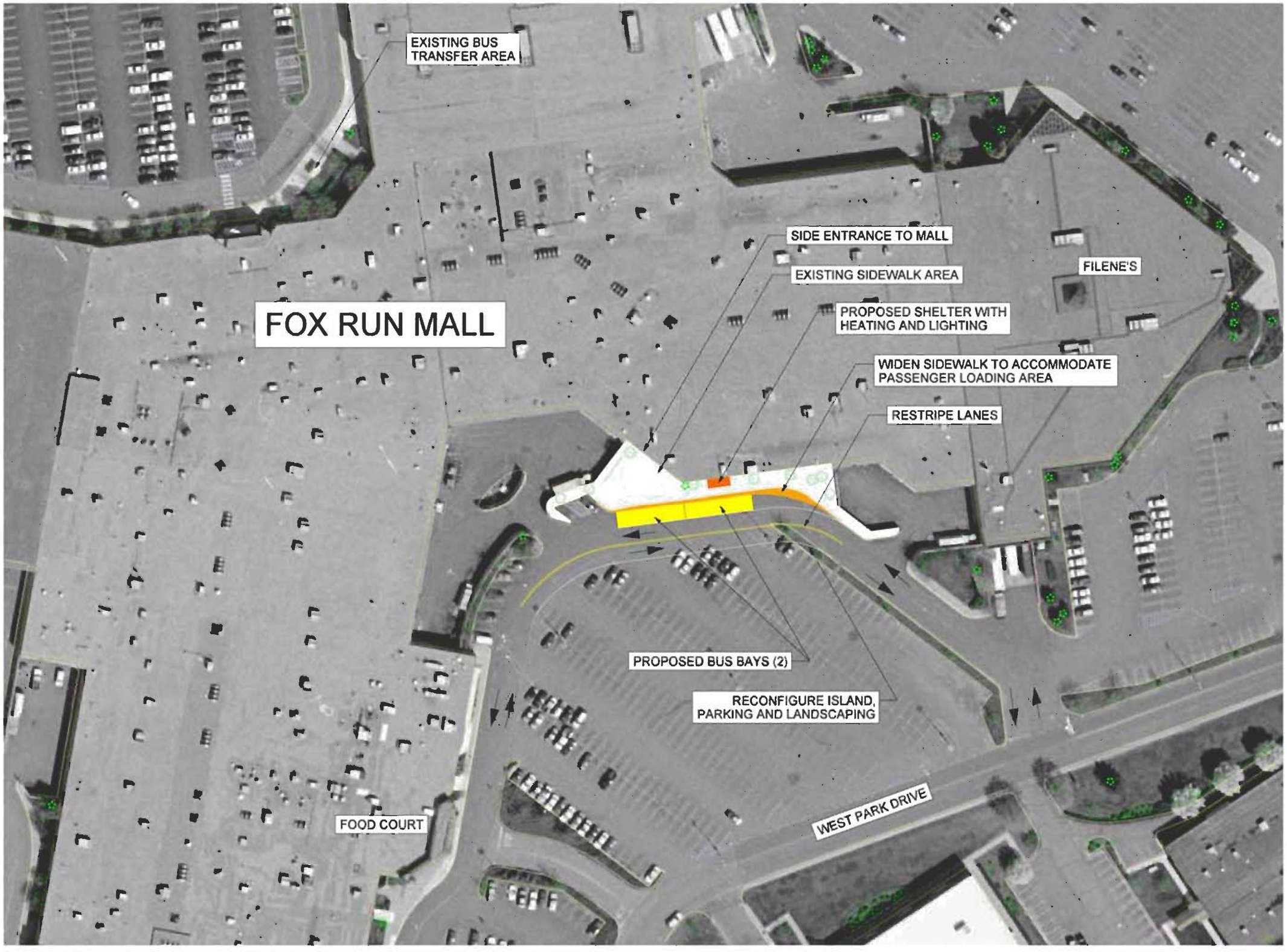
Figure 2.4-10
Bus Alternatives



DOT
Department of Transportation

N

0 40 80 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-11
Proposed Relocated
Fox Run Mall Bus Transfer Point
Newington

LEGEND

- Travel Way of Proposed Roadway
- Shoulder of Proposed Roadway
- Proposed Raised Traffic Islands
- Proposed Sidewalk
- Access Points to Proposed Roadway (Drives, etc.)
- Approximate Limit of Slope Work and Landscaping
- Removal of Existing Pavement Outside of Slope Work
- Existing Pavement (Roadways, Drives, Sidewalks, etc.)
- Existing Gravel Surface (Drives, Paths, etc.)
- Existing Tree and/or Brush Line
- Water (Rivers, Streams, Lakes, Ponds, Swamps, etc.)
- Buildings
- Buildings To Be Removed
- Bridge Removal
- Wetlands
- Property Lines
- State, County, City and Town Lines
- Existing Easement Lines
- Proposed Easement Lines
- Existing R.O.W. (Right-of-Way)
- Proposed R.O.W.
- Existing C.A.R.O.W. (Controlled Access)
- Proposed C.A.R.O.W.
- Existing L.A.R.O.W. (Limited Access)
- Proposed L.A.R.O.W.

Prepared by:
New Hampshire Department of Transportation
Highway Design Bureau

GRID N

CONDUIT ADDED TO INTERSECTION FOR FUTURE SIGNALIZATION

Members Way

LIMIT OF WORK

LIMIT OF WORK

APPROX. EXIST. CURB

Indian Brook Drive

To Spaulding Turnpike & Somersworth

Alder Lane

Sixth Street

Liberty Way

Glenwood Avenue

APPROX. EXIST. ROW

50 0 50 100
SCALE IN FEET

Vanasse Hangen Brustlin, Inc.

Figure 2.4-12
Exit 9 / Indian Brook Drive
Park-and-Ride Facility Dover

New Hampshire DOT
Department of Transportation

Vanasse Hangen Brustlin, Inc.

Figure 2.4-13
Potential Park-and-Ride Facility
Exit 13 / Washington Street
East of Spaulding Turnpike
Rochester

New Hampshire DOT
Department of Transportation

N

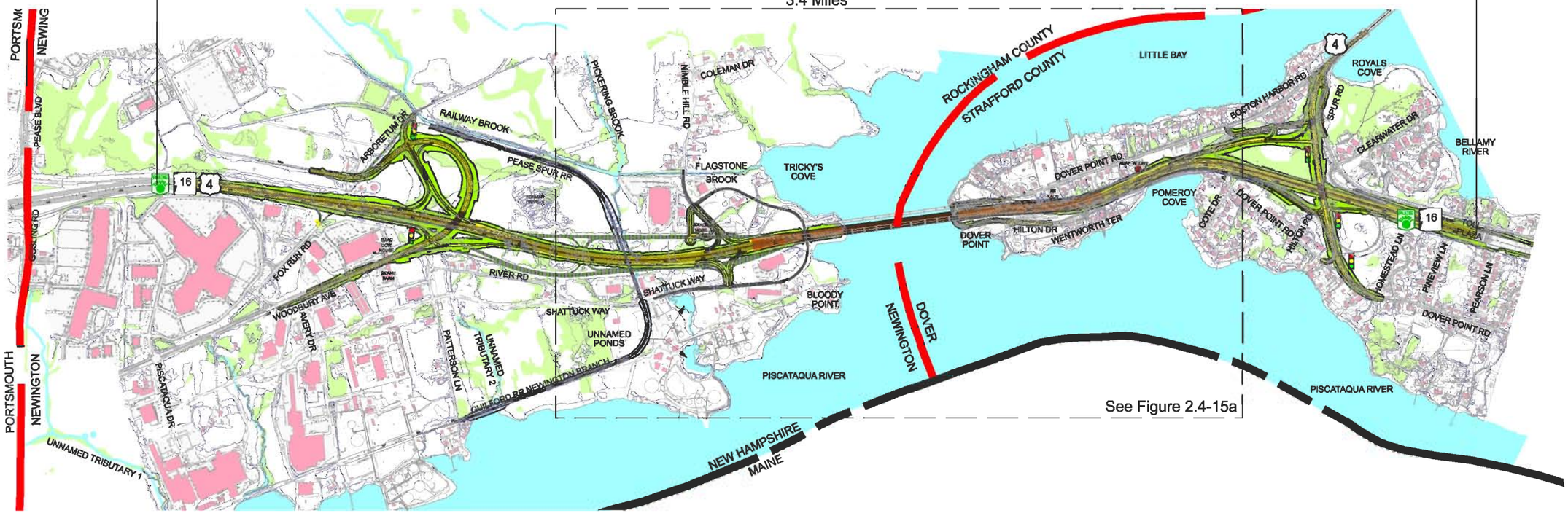
0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-14
Potential Park-and-Ride Facility
Exit 13 / Washington Street
West of Spaulding Turnpike
Rochester

Six-Lane

Six-Lanes
3.4 Miles

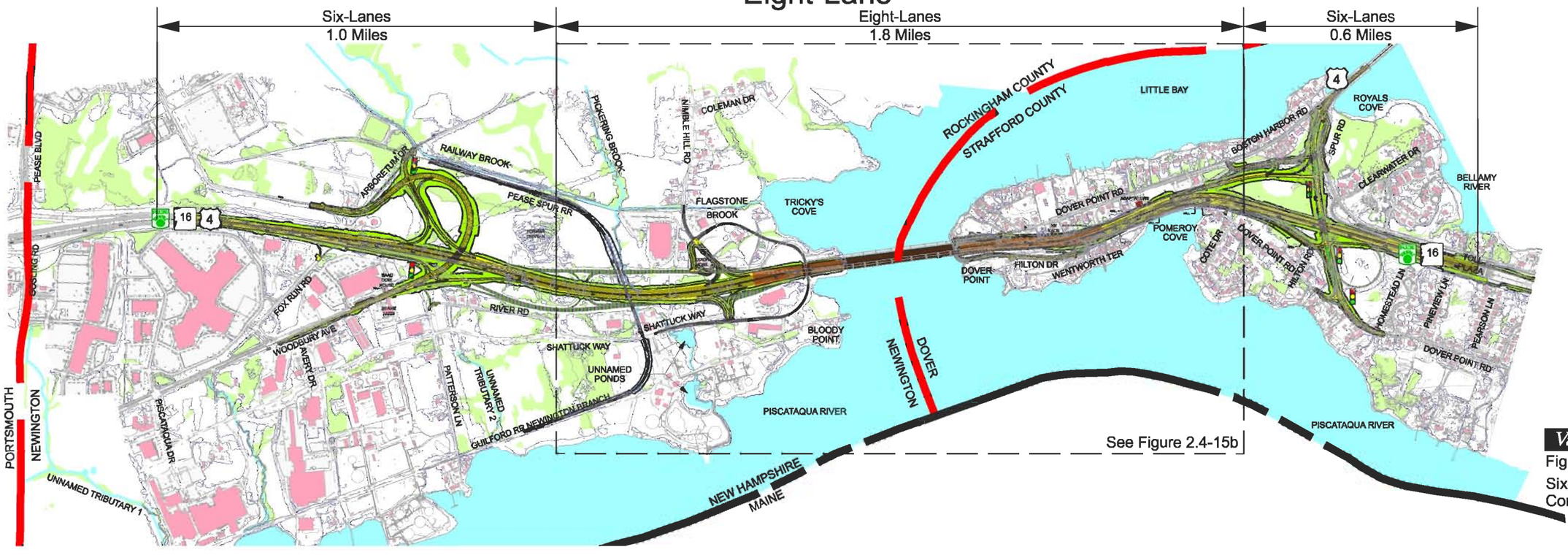


Eight-Lane

Six-Lanes
1.0 Miles

Eight-Lanes
1.8 Miles

Six-Lanes
0.6 Miles



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Future Pease Railroad Spur
- Proposed Acquisition
- Newington Interim Safety Improvements

N

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-15
Six-Lane and Eight-Lane Comparison

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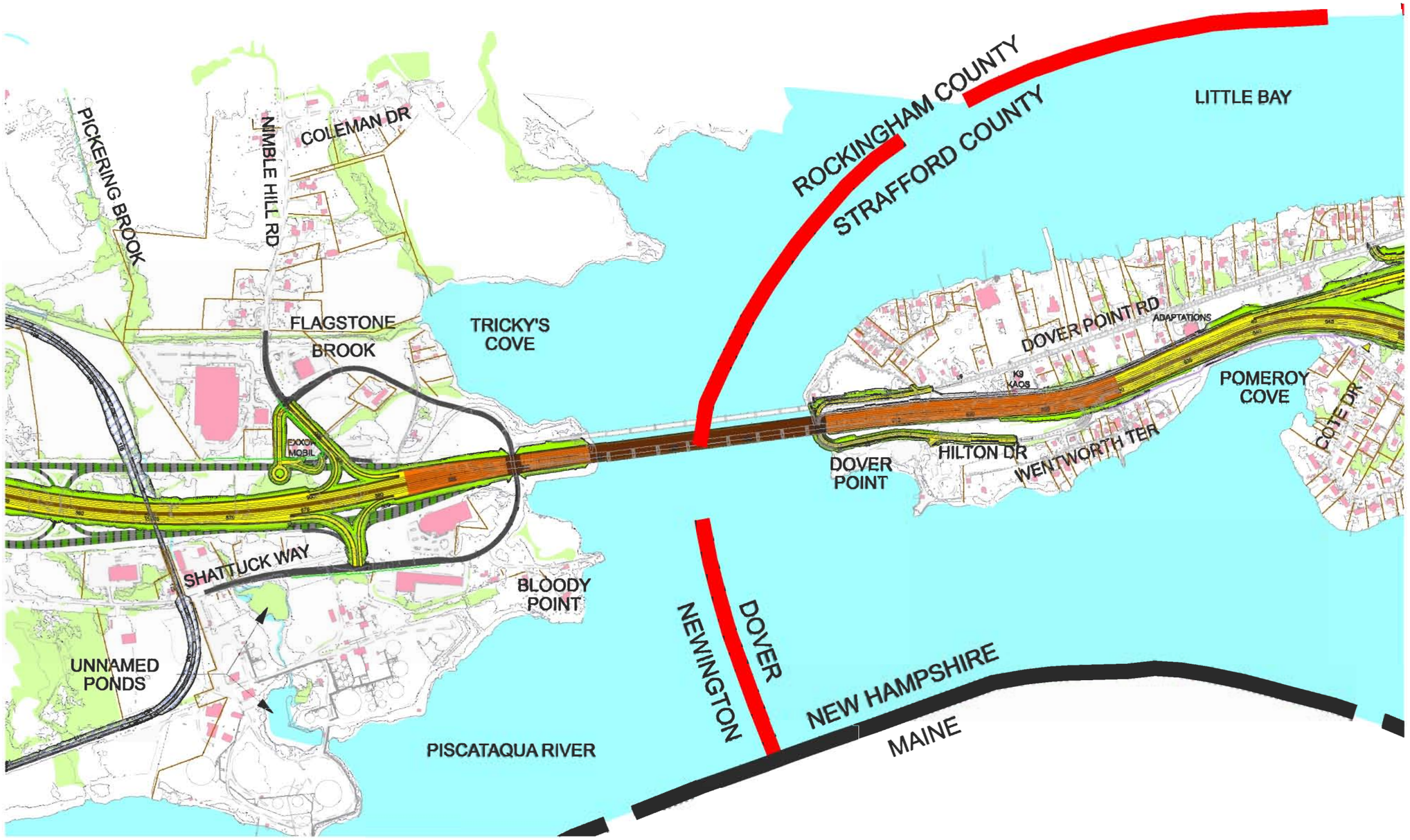


Legend:

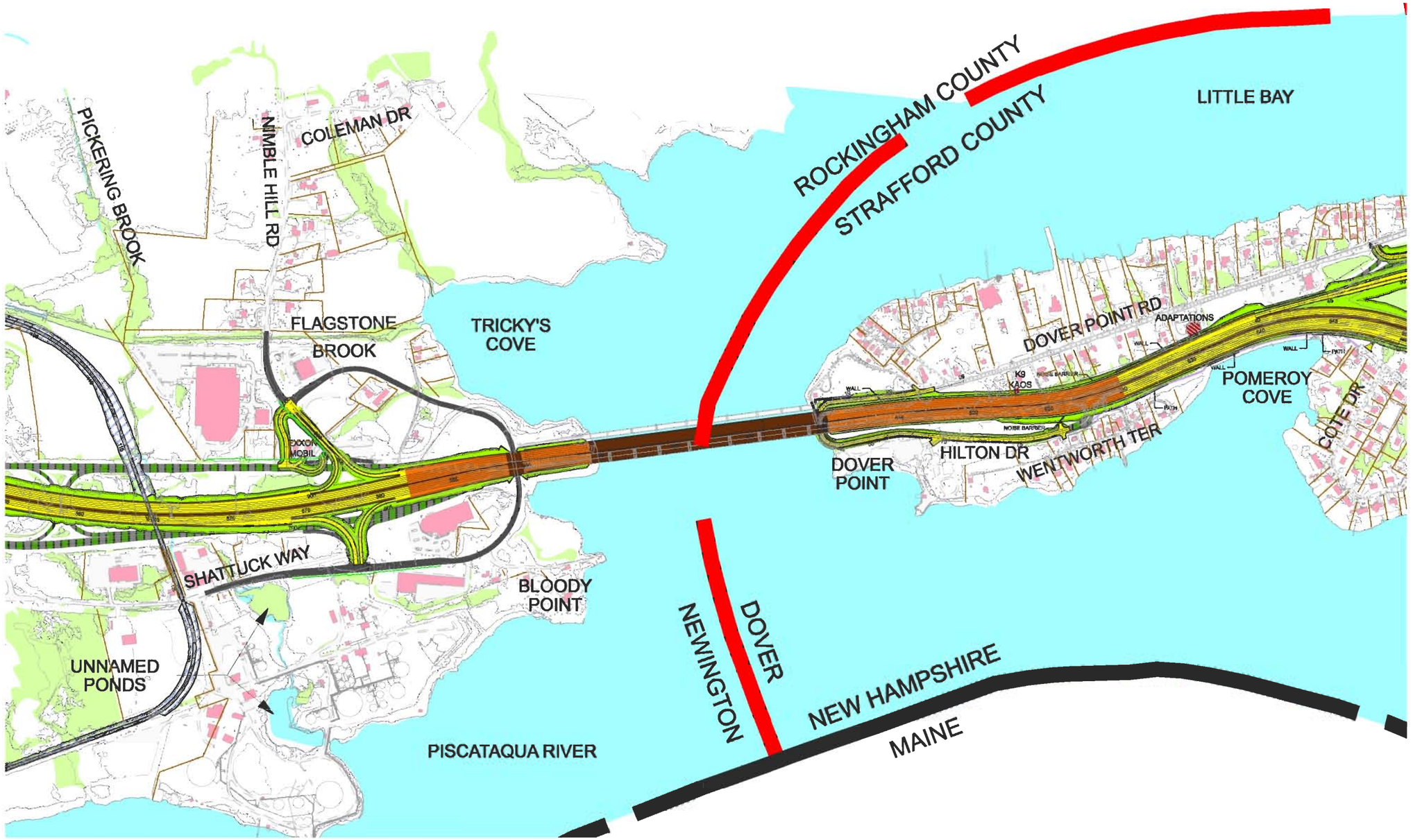
- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Future Pease Railroad Spur
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Newington Interim Safety Improvements

N

0 350 700 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-15a
Six-Lane Overview



Legend:

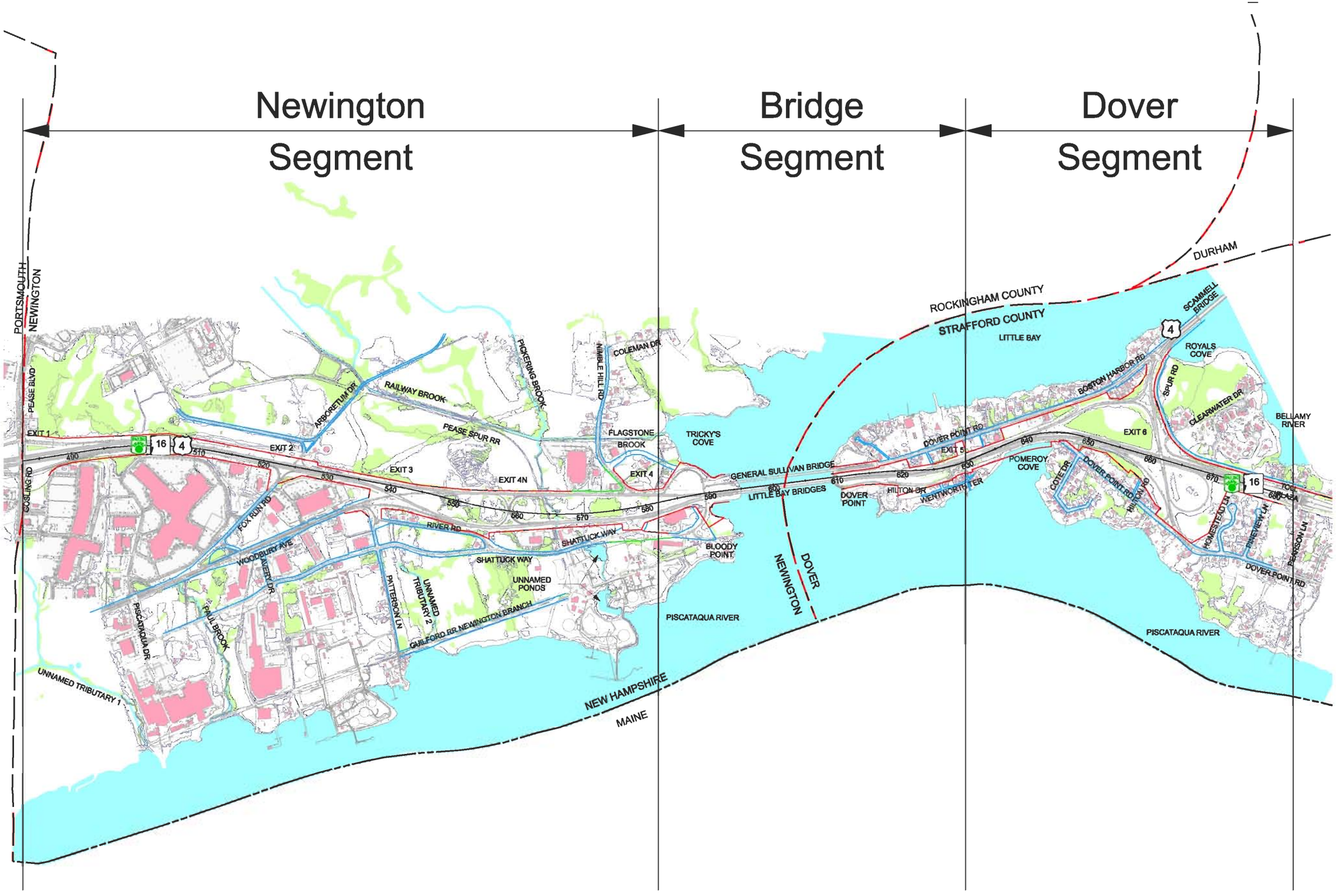
- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Future Pease Railroad Spur
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Newington Interim Safety Improvements

N

0 350 700 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-15b
Eight-Lane Overview



New Hampshire DOT
Department of Transportation

Legend:
- Existing Pavement
- Building
- Water
- Wetlands

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-16
Segment Breakout Map

PORTSMOUTH

NEWINGTON

PEASE BLVD

GOSLING RD

ARBORETUM DR

RAILWAY BROOK

PEASE SPUR RR

PICKERING BROOK

NIMBLE HILL RD

COLEMAN DR

FLAGSTONE BROOK

TRICKY'S COVE

FORMER DRIVE-IN

EXXON MOBIL

SPAULDING TURNPIKE

16

4

490

510

520

530

540

550

560

570

580

590

3/4

ISAAC DOW HOUSE

BEANE FARM

FOX RUN RD

RIVER RD

SHATTUCK WAY

BLOODY POINT

WOODBURY AVE

AVERY DR

PATTERSON LN

UNNAMED TRIBUTARY 2

UNNAMED PONDS

GUILFORD RR NEWINGTON BRANCH

PISCATAQUA DR

PAUL BROOK

PISCATAQUA RIVER

UNNAMED TRIBUTARY 1

NEW HAMPSHIRE

MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-17
Newington Alternative 6 Revised

Data Created: 7/12/2006 J:\51425\cad\tal\phase3\NDEIS\fig020417.dgn

PORTSMOUTH
NEWINGTON

PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
INDUSTRIAL TRAFFIC CONNECTOR
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
FORMER DRIVE-IN
EXXON MOBIL
ISAAC DOW HOUSE
BEANE FARM
FOX RUN RD
WOODBURY AVE
AVERY DR
RIVER RD
SHATTUCK WAY
SHATTUCK WAY
BLOODY POINT
UNNAMED PONDS
PATTERSON LN
UNNAMED TRIBUTARY 2
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA DR
PAUL BROOK
PISCATAQUA RIVER
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

16 4 SPAULDING TURNPIKE

490 510 520 530 540 550 560 570 580 590

1 2 3 3/4

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-18
Newington Alternative 7

Date Created: 7/12/2006 I:\51425\cad\tal\phase3\DEIS\fig020418.dgn

PORTSMOUTH

NEWINGTON

PEASE BLVD

GOSLING RD

FOX RUN RD

WOODBURY AVE

AVERY DR

PISCATAQUA DR

PAUL BROOK

UNNAMED TRIBUTARY 1

ARBORETUM DR

RAILWAY BROOK

PEASE SPUR RR

INDUSTRIAL TRAFFIC CONNECTOR

PICKERING BROOK

NIMBLE HILL RD

COLEMAN DR

POSSIBLE LOCAL CONNECTION

LOCAL TRAFFIC CONNECTOR

FLAGSTONE BROOK

TRICKY'S COVE

POSSIBLE SB OFF RAMP

FORMER DRIVE-IN

EXXON MOBIL

ISAAC DOW HOUSE

BEANE FARM

RIVER RD

SHATTUCK WAY

BLOODY POINT

UNNAMED PONDS

PATTERSON LN

UNNAMED TRIBUTARY 2

GUILFORD RR NEWINGTON BRANCH

PISCATAQUA RIVER

NEW HAMPSHIRE

MAINE

16

4

490

510

520

530

540

550

560

570

580

590

3/4

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-19
Newington Alternative 9

Data Created: 7/12/2006 J:\51425\cad\tal\phase3\DEIS\fig020419.dgn

PORTSMOUTH

NEWINGTON

PEASE BLVD

GOSLING RD

ARBORETUM DR

RAILWAY BROOK

INDUSTRIAL TRAFFIC CONNECTOR

PICKERING BROOK

NIMBLE HILL RD

COLEMAN DR

PEASE SPUR RR

FORMER DRIVE-IN

POSSIBLE LOCAL CONNECTION

LOCAL TRAFFIC CONNECTOR

EXXON MOBIL

FLAGSTONE BROOK

TRICKY'S COVE

POSSIBLE SB OFF RAMP

SPAULDING TURNPIKE

16

4

490

510

520

530

540

550

560

570

580

590

ISAAC DOW HOUSE

FOX RUN RD

BEANE FARM

RIVER RD

SHATTUCK WAY

BLOODY POINT

WOODBURY AVE

AVERY DR

PATTERSON LN

UNNAMED TRIBUTARY 2

UNNAMED PONDS

GUILFORD RR NEWINGTON BRANCH

PISCATAQUA DR

PAUL BROOK

PISCATAQUA RIVER

UNNAMED TRIBUTARY 1

NEW HAMPSHIRE

MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-20
Newington Alternative 10

Date Created: 7/12/2006 J:\51425\cad\tal\phase3\DEIS\fig020420.dgn

PORTSMOUTH

NEWINGTON

PEASE BLVD

COSLING RD

EXIT 1

16

4

SPAULDING TURNPIKE

DETENTION BASIN #500 SB

EXIT 2

ARBORETUM DR

RAILWAY BROOK

TRADEPORT CONNECTOR

PEASE SPUR RR

EXIT 3

FORMER DRIVE-IN

PICKERING BROOK

EXIT 4N

LOCAL TRAFFIC CONNECTOR

NIMBLE HILL RD

COLEMAN DR

FLAGSTONE

BROOK

TRICKY'S COVE

EXIT 4

DETENTION BASIN #502 SB

DETENTION BASIN #502 NB

DETENTION BASIN #647 SB

DETENTION BASIN #502 NB

DETENTION BASIN #646 SB

DETENTION BASIN #641 SB

SWALE #502 SB

SWALE #502 NB

SWALE #503 NB

SWALE #503 SB

SWALE #504

SWALE #502

SWALE #524

ISAAC DOW HOUSE

BEANE FARM

FOX RUN RD

RIVER RD

INDUSTRIAL TRAFFIC CONNECTOR

DETENTION BASIN #647 NB

DETENTION BASIN #576 NB

SHATTUCK WAY

BLOODY POINT

WOODBURY AVE

AVERY DR

SHATTUCK WAY

PEASE SPUR

UNNAMED PONDS

PATTERSON LN

UNNAMED TRIBUTARY 2

PISCATAQUA DR

GUILFORD RR NEWINGTON BRANCH

PISCATAQUA RIVER

UNNAMED TRIBUTARY 1

NEW HAMPSHIRE

MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-21
Newington Alternative 10A

Date Created: 7/12/2006

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PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
INDUSTRIAL TRAFFIC CONNECTOR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
PEASE SPUR RR
FORMER DRIVE-IN
POSSIBLE LOCAL CONNECTION
FLAGSTONE BROOK
TRICKY'S COVE
POSSIBLE SB OFF RAMP
EXXON MOBIL
SPAULDING TURNPIKE
16
4
490
510
520
530
540
550
560
570
580
590
600
ISAAC DOW HOUSE
BEANE FARM
FOX RUN RD
WOODBURY AVE
AVERY DR
RIVER RD
SHATTUCK WAY
BLOODY POINT
PATTERSON LN
UNNAMED TRIBUTARY 2
GUILFORD RR NEWINGTON BRANCH
UNNAMED PONDS
PISCATAQUA DR
PAUL BROOK
PISCATAQUA RIVER
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-22
Newington Alternative 11

PORTSMOUTH
NEWINGTON

PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
INDUSTRIAL TRAFFIC CONNECTOR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
PEASE SPUR RR
FORMER DRIVE-IN
POSSIBLE LOCAL CONNECTION
FLAGSTONE BROOK
TRICKY'S COVE
POSSIBLE SB OFF RAMP
EXXON MOBIL
ISAAC DOW HOUSE
FOX RUN RD
BEANE FARM
RIVER RD
SHATTUCK WAY
BLOODY POINT
WOODBURY AVE
ERY DR
PATTERSON LN
UNNAMED TRIBUTARY 2
UNNAMED PONDS
PISCATAQUA DR
PAUL BROOK
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

16 4 SPAULDING TURNPIKE

490 510 520 530 540 550 560 570 580 590

New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements
- Relocated Rail Spur

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-23
Newington Alternative 12

Data Created: 7/12/2006 J:\51425\cad\tal\phase3\NDEIS\fig020423.dgn

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
PEASE BLVD
COSLING RD
EXIT 1
16
4
SPAULDING TURNPIKE
DETENTION BASIN #360 SB
ARBORETUM DR
RAILWAY BROOK
EXIT 2
TRADEPORT CONNECTOR
SWALE #3033 SB
SWALE #3024
SWALE #3037
SWALE #3034
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
EXIT 3
FORMER DRIVE-IN
INDUSTRIAL TRAFFIC CONNECTOR
EXIT 4N
LOCAL TRAFFIC CONNECTOR
DETENTION BASIN #367 SB
EXIT 4
EXXON MOBIL
DETENTION BASIN #365 SB
SWALE #371 SB
SWALE #360 SB
ISAAC DOW HOUSE
FOX RUN RD
BEANE FARM
RIVER RD
DETENTION BASIN #370 NB
SHATTUCK WAY
BLOODY POINT
WOODBURY AVE
AVERY DR
PATTERSON LN
PEASE SPUR
UNNAMED TRIBUTARY 2
SHATTUCK WAY
UNNAMED PONDS
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
PISCATAQUA DR
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-24
Newington Alternative 12A

Date Created: 7/12/2006

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PORTSMOUTH

NEWINGTON

PEASE BLVD

COSLING RD

EXIT 1

16

4

EXIT 2

ARBORETUM DR

RAILWAY BROOK

TRADEPORT CONNECTOR

PEASE SPUR RR

PICKERING BROOK

NIMBLE HILL RD

COLEMAN DR

FLAGSTONE BROOK

TRICKY'S COVE

EXIT 3

FORMER DRIVE-IN

PEASE SPUR

EXIT 4N

EXIT 4

DIXON MOBIL

ISAAC DOW HOUSE

BEANE FARM

FOX RUN RD

RIVER RD

SHATTUCK WAY

BLOODY POINT

WOODBURY AVE

AVERY DR

SHATTUCK WAY

UNNAMED PONDS

PATTERSON LN

UNNAMED TRIBUTARY 2

GUILFORD RR NEWINGTON BRANCH

PISCATAQUA RIVER

PISCATAQUA DR

UNNAMED TRIBUTARY 1

NEW HAMPSHIRE

MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-25
Newington Alternative 13

Date Created: 7/12/2006

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New Hampshire DOT
Department of Transportation

DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
SCAMMELL BRIDGE
ROYALS COVE
BAYVIEW PARK
SPUR RD
BOSTON HARBOR RD
CLEARWATER DR
BELLAMY RIVER
TRICKY'S COVE
HILTON PARK
DOVER POINT RD
EXIT 5
EXIT 6
POMEROY COVE
GENERAL SULLIVAN BRIDGE
LITTLE BAY BRIDGES
DOVER POINT
HILTON PARK
HILTON DR
WENTWORTH TER
COTE DR
HILTON RD
TOLL PLAZA
HOMESTEAD LN
SKYVIEW LN
PEARSON LN
SHATTUCK WAY (FORMERLY RIVER RD)
BLOODY POINT
NEWINGTON
DOVER
NEW HAMPSHIRE
MAINE
PISCATAQUA RIVER

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- Proposed Bridge
- 1 or 2 Lane Conceptual Roadway
- Proposed Signal
- 3/4 Proposed Roadway Lanes
- Existing ROW
- Existing Property Lines
- Newington Interim Safety Improvements

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-26
Dover Alternative 1

Date Created: 7/12/2006 J:\51425\cad\ta\phase3\DEIS\fig020426.dgn

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-27
Dover Alternative 2

Date Created: 7/13/2006 j:\51425\cad\te\phase3\DEIS\fig020427.dgn

New Hampshire DOT
Department of Transportation

DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
SCAMMELL BRIDGE
4
ROYALS COVE
BOSTON HARBOR RD
SPUR RD
BAYVIEW PARK
CLEARWATER DR
BELLAMY RIVER
TRICKY'S COVE
HILTON PARK
DOVER POINT RD
EXIT 5
EXIT 6
POMEROY COVE
COTE DR
HILTON RD
TOLL PLAZA
16
GENERAL SULLIVAN BRIDGE
LITTLE BAY BRIDGES
DOVER POINT
HILTON PARK
HILTON DR
WENTWORTH TER
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
SHATTUCK WAY (FORMERLY RIVER RD)
BLOODY POINT
DOVER
NEWINGTON
NEW HAMPSHIRE
MAINE
PISCATAQUA RIVER

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements

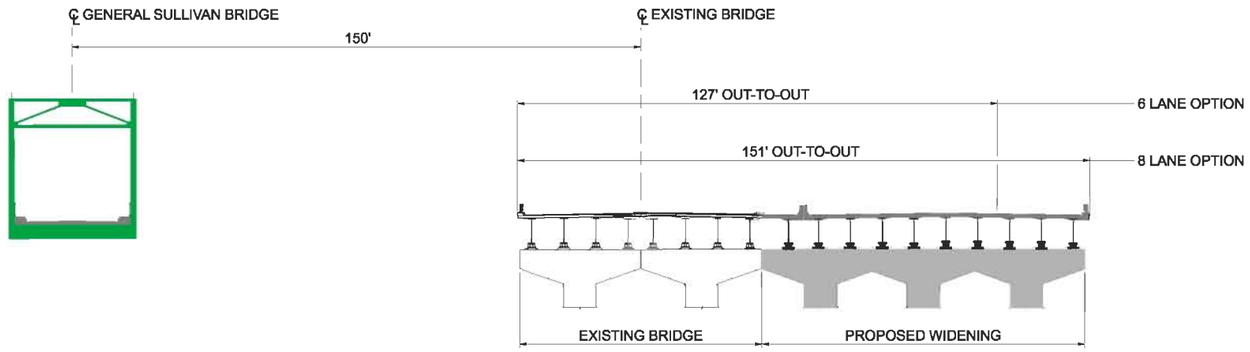
0 400 800 Feet

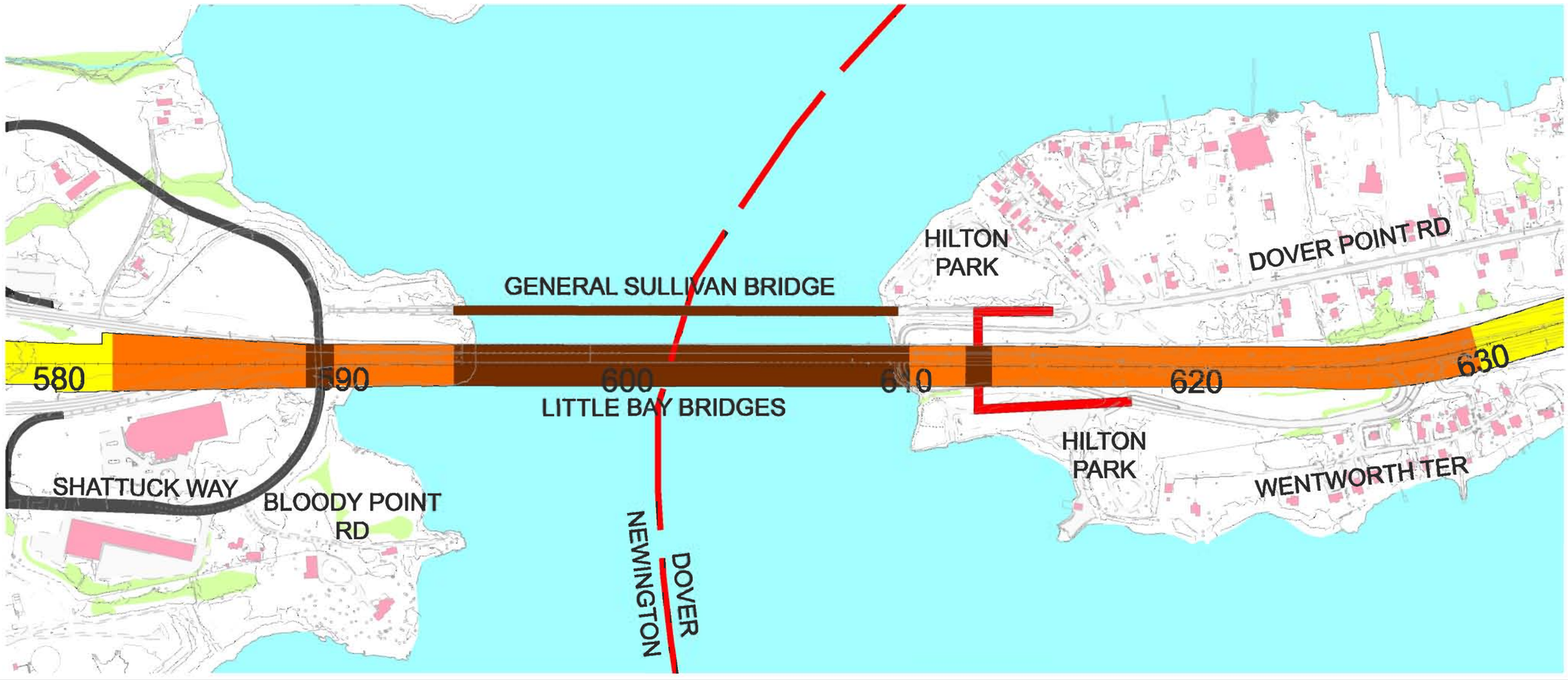
Vanasse Hangen Brustlin, Inc.

Figure 2.4-28
Dover Alternative 3

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig020428.dgn

Conceptual Cross-Section





New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Newington Interim Safety Improvements

0 200 400 Feet

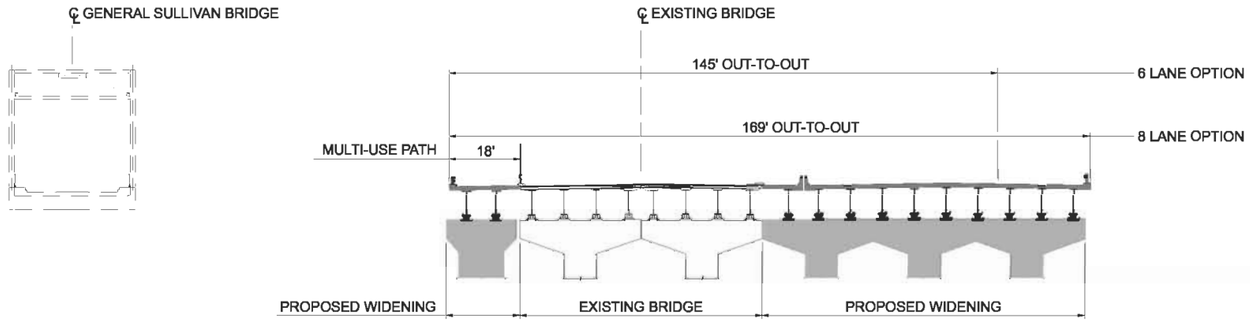
Vanasse Hangen Brustlin, Inc.

Figure 2.4-29
Widen Little Bay Bridges to East Side and Rehabilitate General Sullivan Bridge

Data Created: 7/12/2006 J:\51425\cad\tai\phase3\DEIS\fig020429.dgn

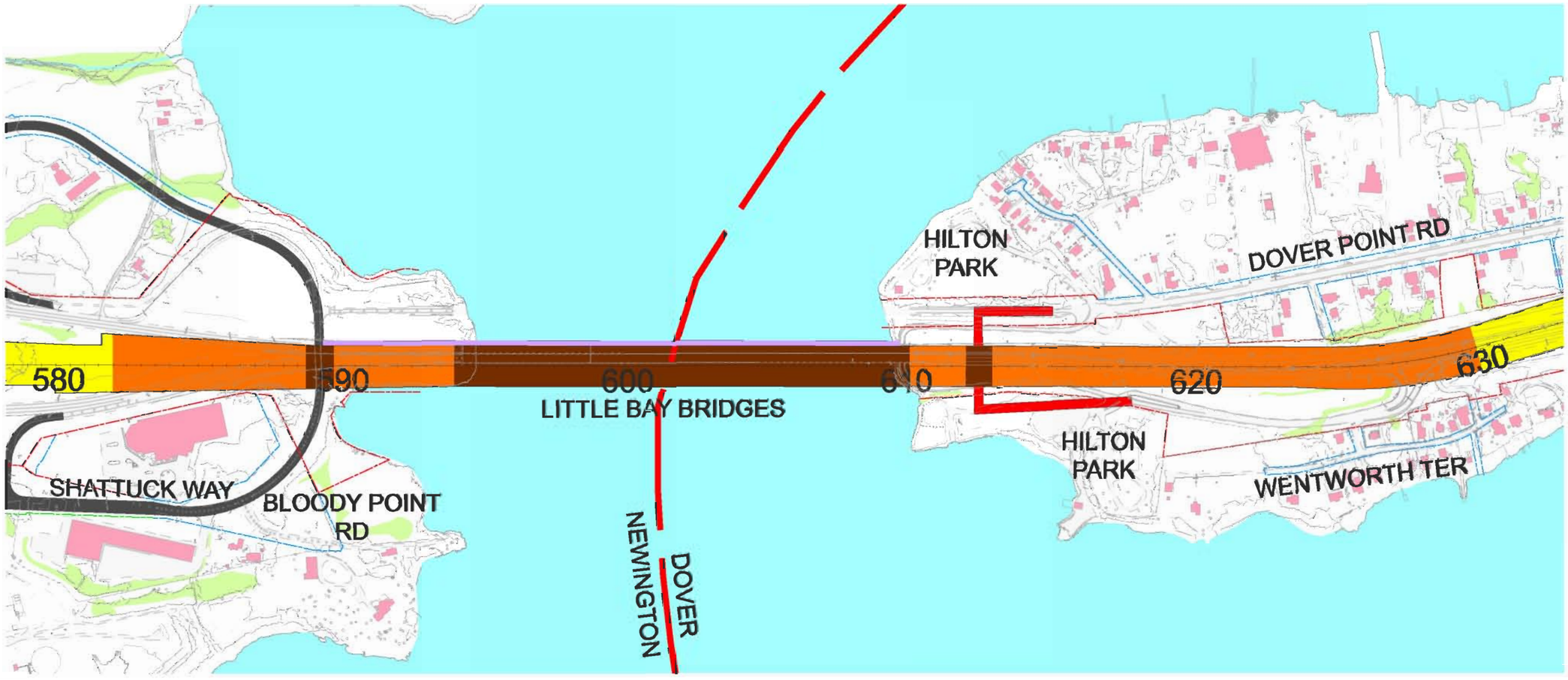
New Hampshire DOT
Department of Transportation

Conceptual Cross-Section



Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Multi-use Pathway
- Newington Interim Safety Improvements



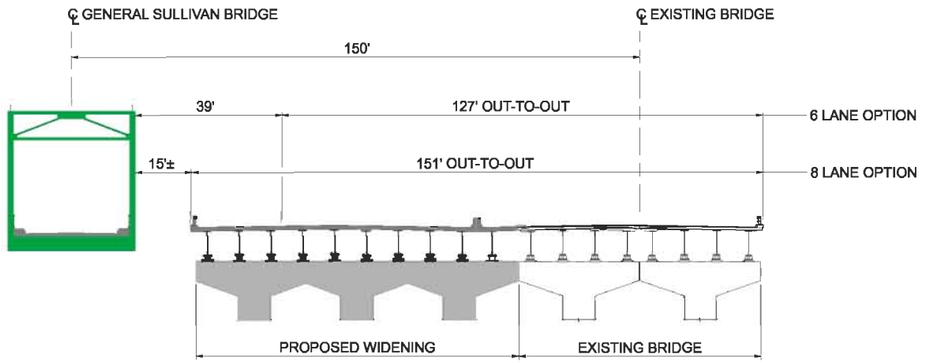
0 200 400 Feet

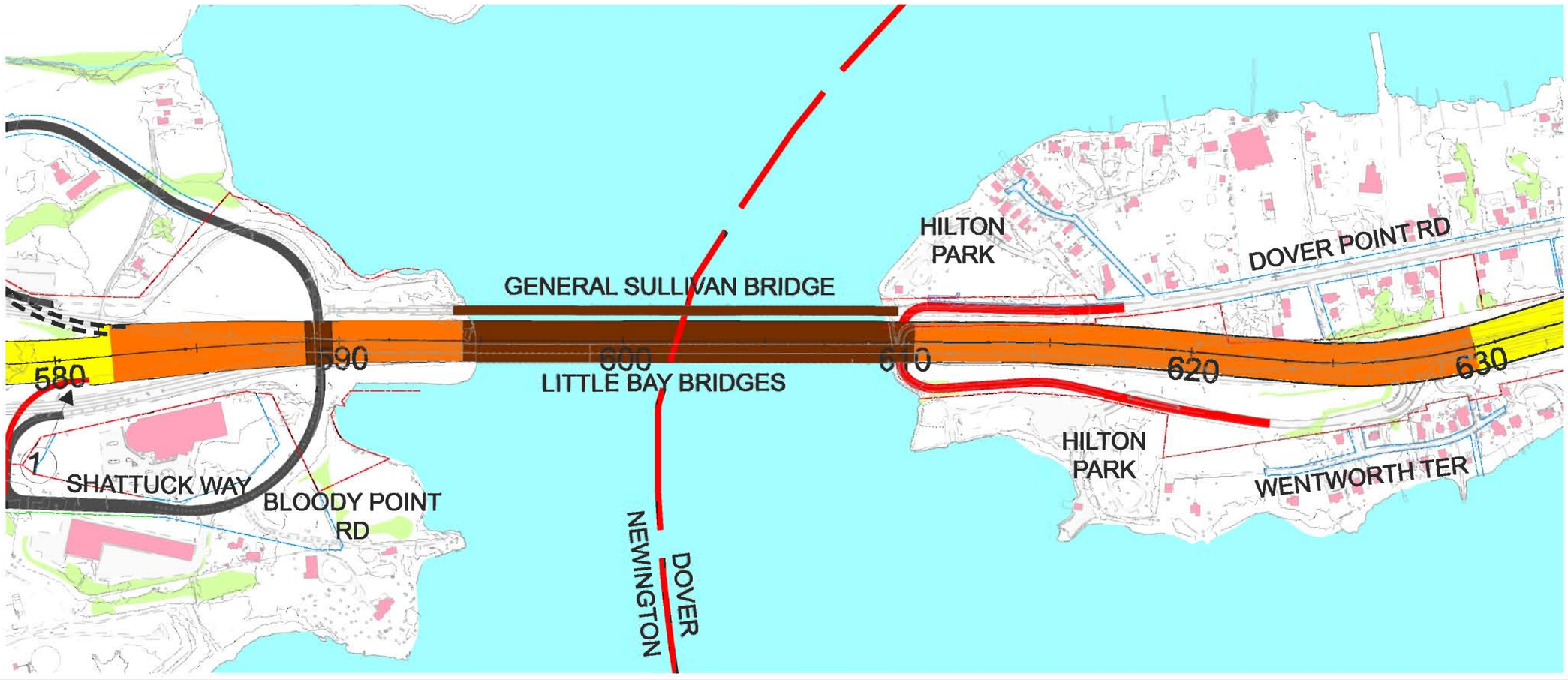
Vanasse Hangen Brustlin, Inc.

Figure 2.4-30
Widen Little Bay Bridges to East Side with Multi-Use Path and Remove General Sullivan Bridge

Date Created: 7/12/2006 J:\51425\cad\tai\phase3\DEIS\fig020430.dgn

Conceptual Cross-Section





New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Newington Interim Safety Improvements

0 200 400 Feet

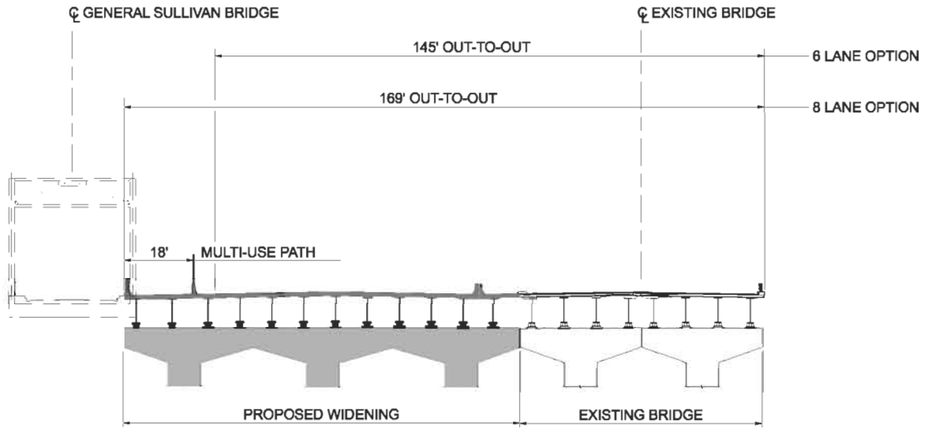
Vanasse Hangen Brustlin, Inc.

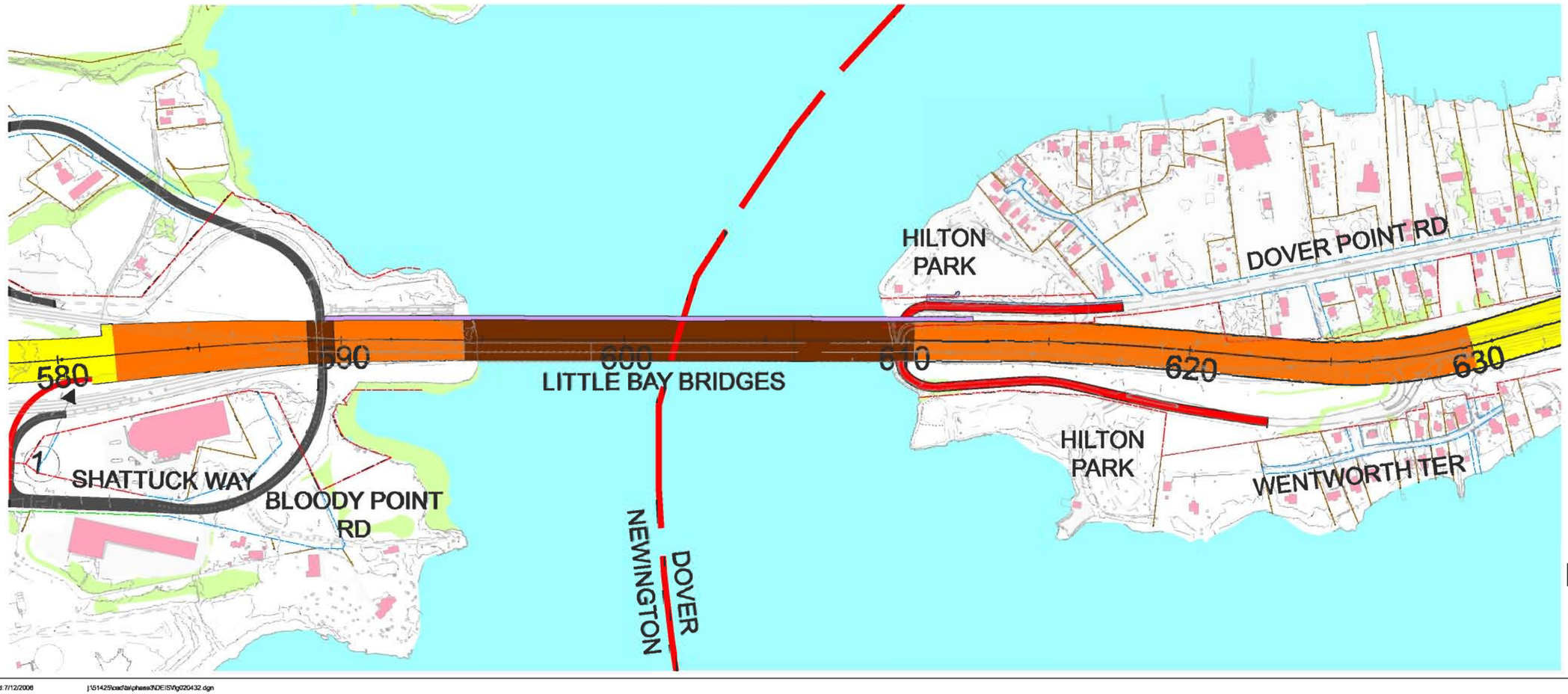
Figure 2.4-31
Widen Little Bay Bridges to West Side and Rehabilitate General Sullivan Bridge

Date Created: 7/13/2006 J:\51425\cad\tif\phase3\DEIS\fig020431.dgn

New Hampshire DOT
Department of Transportation

Conceptual Cross-Section





Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Multi-use Pathway
- Newington Interim Safety Improvements

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-32
Widen Little Bay Bridges to West Side with Multi-Use Path and Remove General Sullivan Bridge

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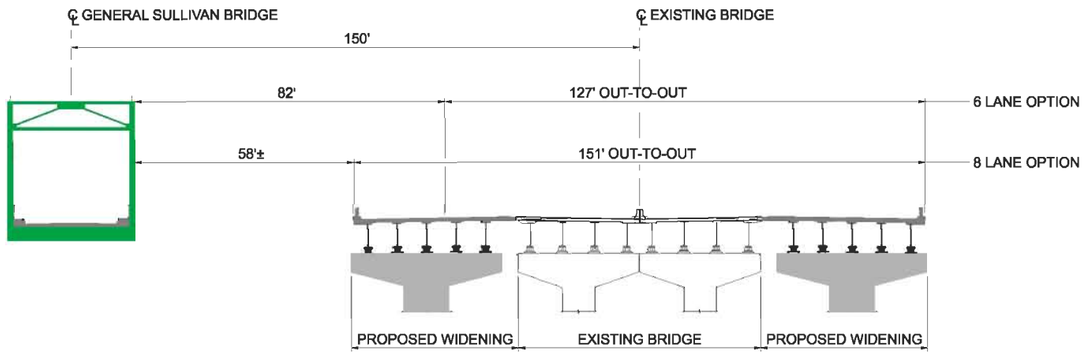
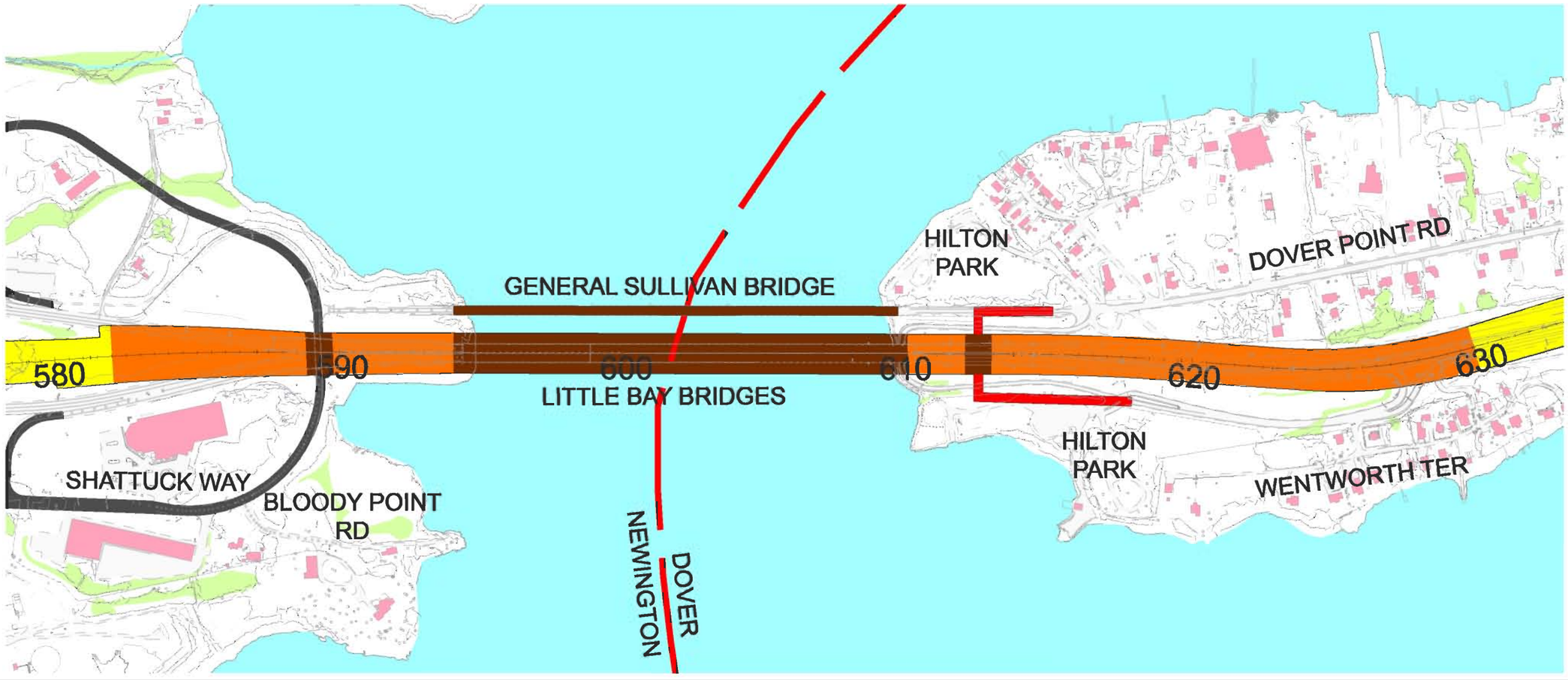
New Hampshire DOT
Department of Transportation

Conceptual Cross-Section





Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Newington Interim Safety Improvements

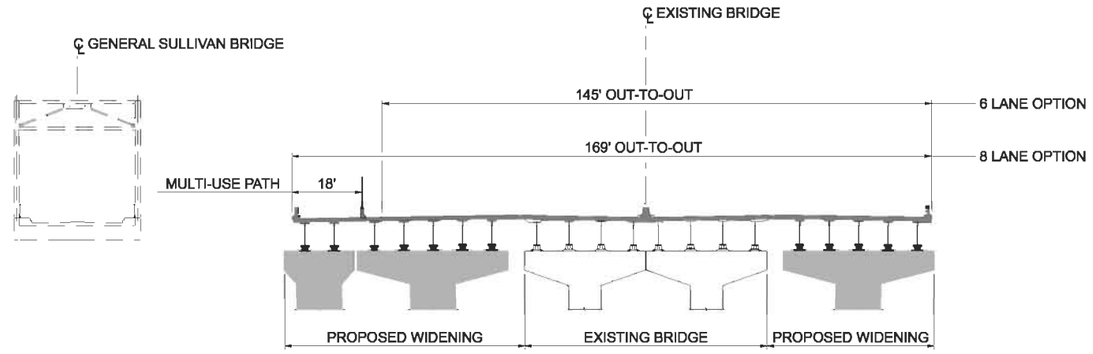
0 200 400 Feet

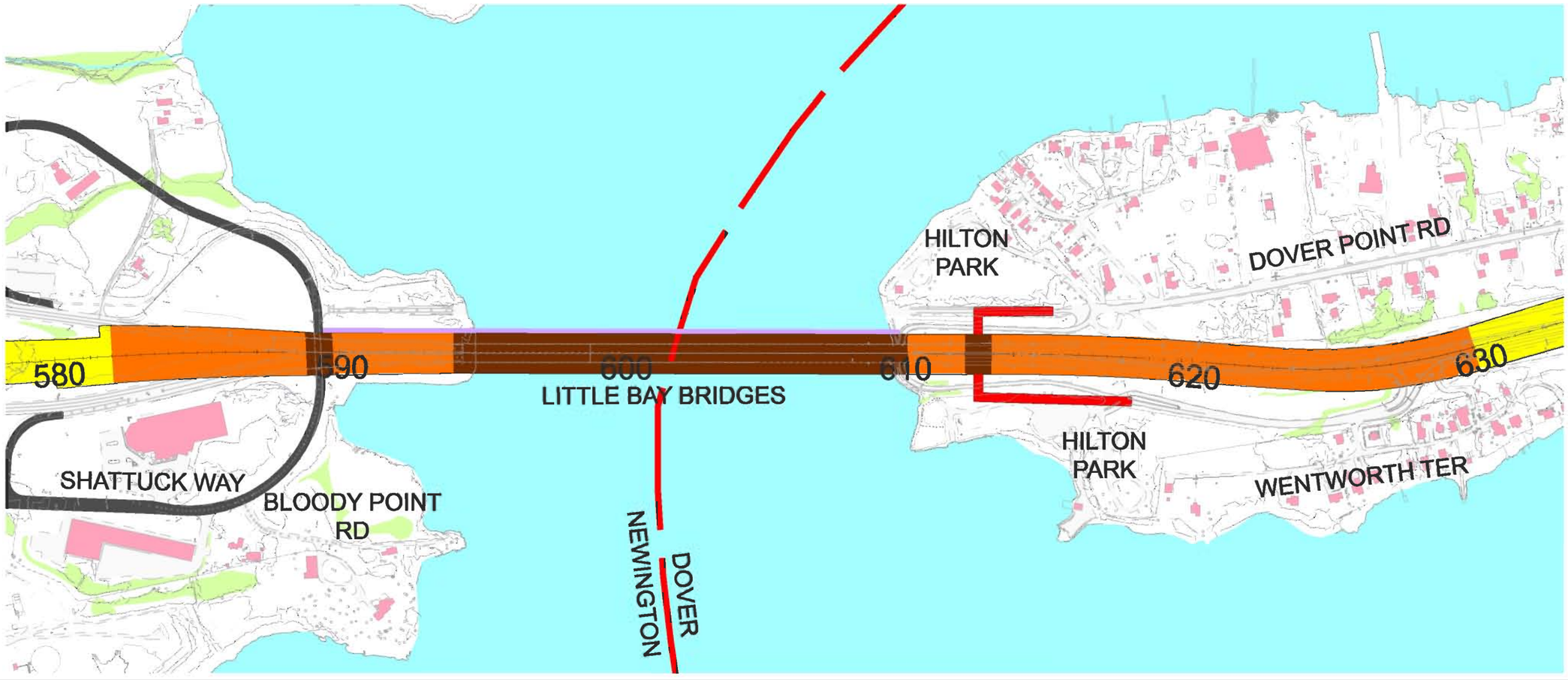
Vanasse Hangen Brustlin, Inc.

Figure 2.4-33
Widen Little Bay Bridges to Both Sides and Rehabilitate General Sullivan Bridge

Date Created: 7/12/2006 J:\51425\cad\ai\phase3\DEIS\fig020433.dgn

Conceptual Cross-Section





New Hampshire DOT
Department of Transportation

Legend:

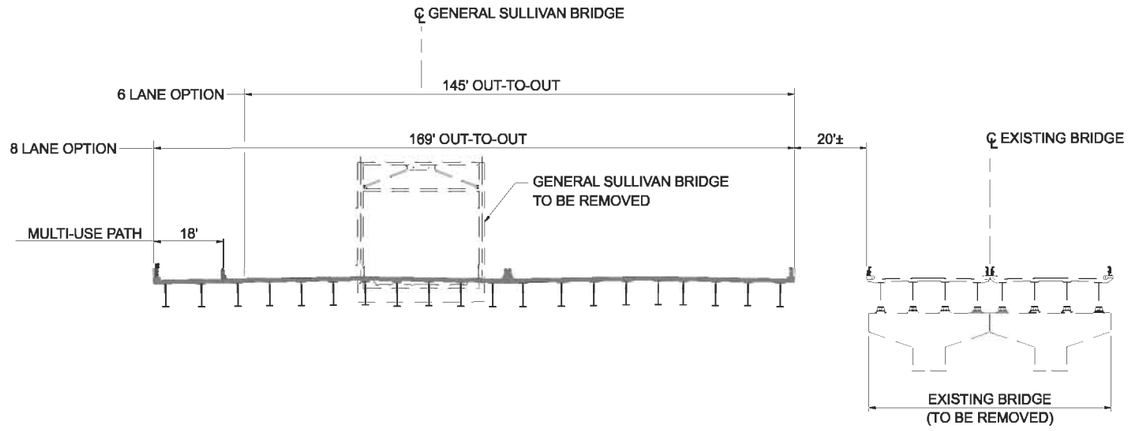
- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Multi-use Pathway
- Newington Interim Safety Improvements

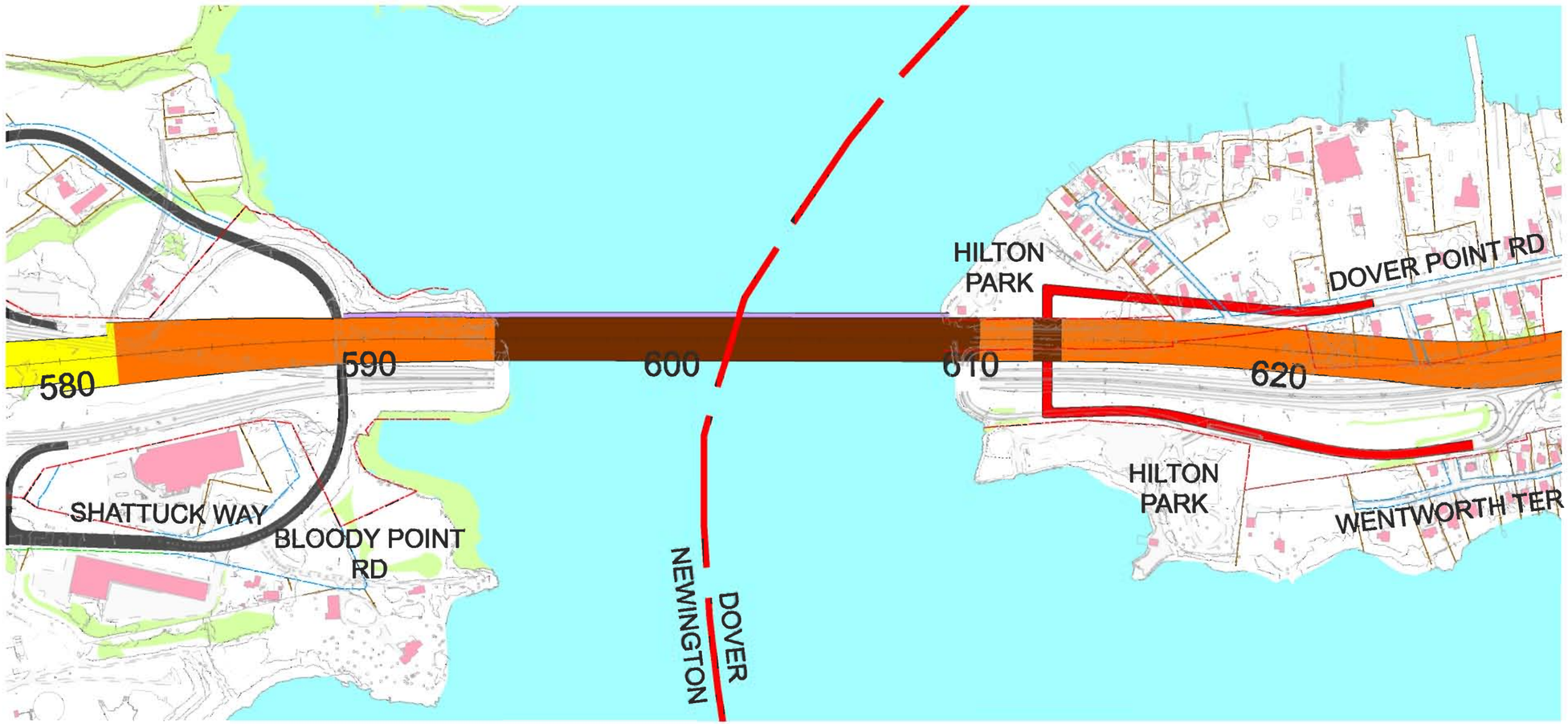
0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-34
Widen Little Bay Bridges to Both Sides with Multi-Use Path and Remove General Sullivan Bridge

Conceptual Cross-Section





New Hampshire DOT
Department of Transportation

Legend:

- Existing Pavement
- Building
- Water
- Wetlands
- Conceptual Roadway Improvements
- 1 or 2 Lane Conceptual Roadway
- Proposed Bridge
- Multi-use Pathway
- Newington Interim Safety Improvements

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-35
Construct New Bridge with Multi-Use Path - Replace Little Bay Bridges and General Sullivan Bridge

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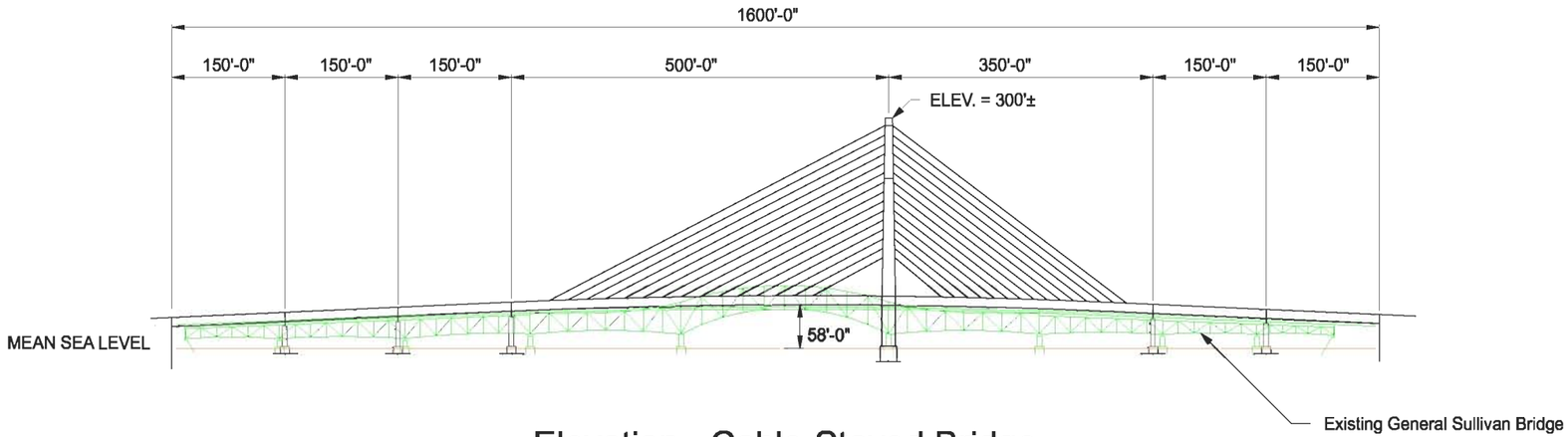
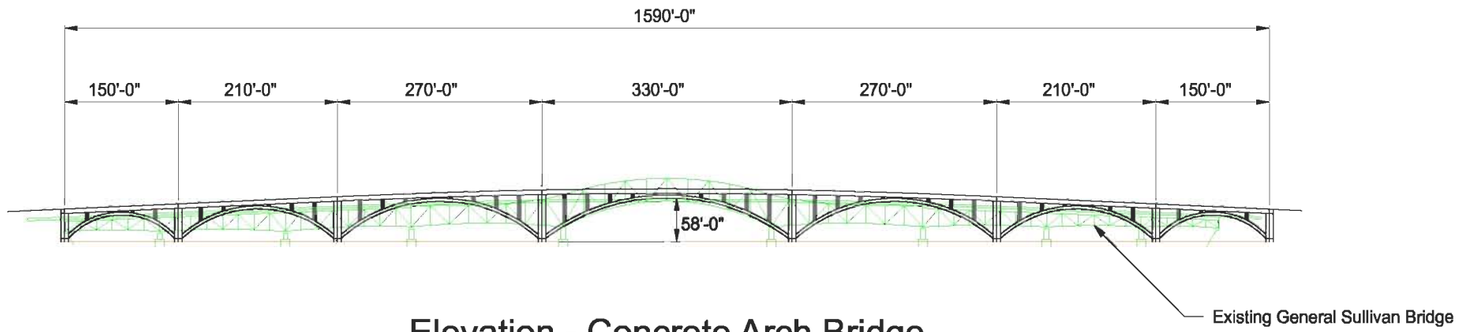


Elevation - Cable-Stayed Bridge

N.T.S.



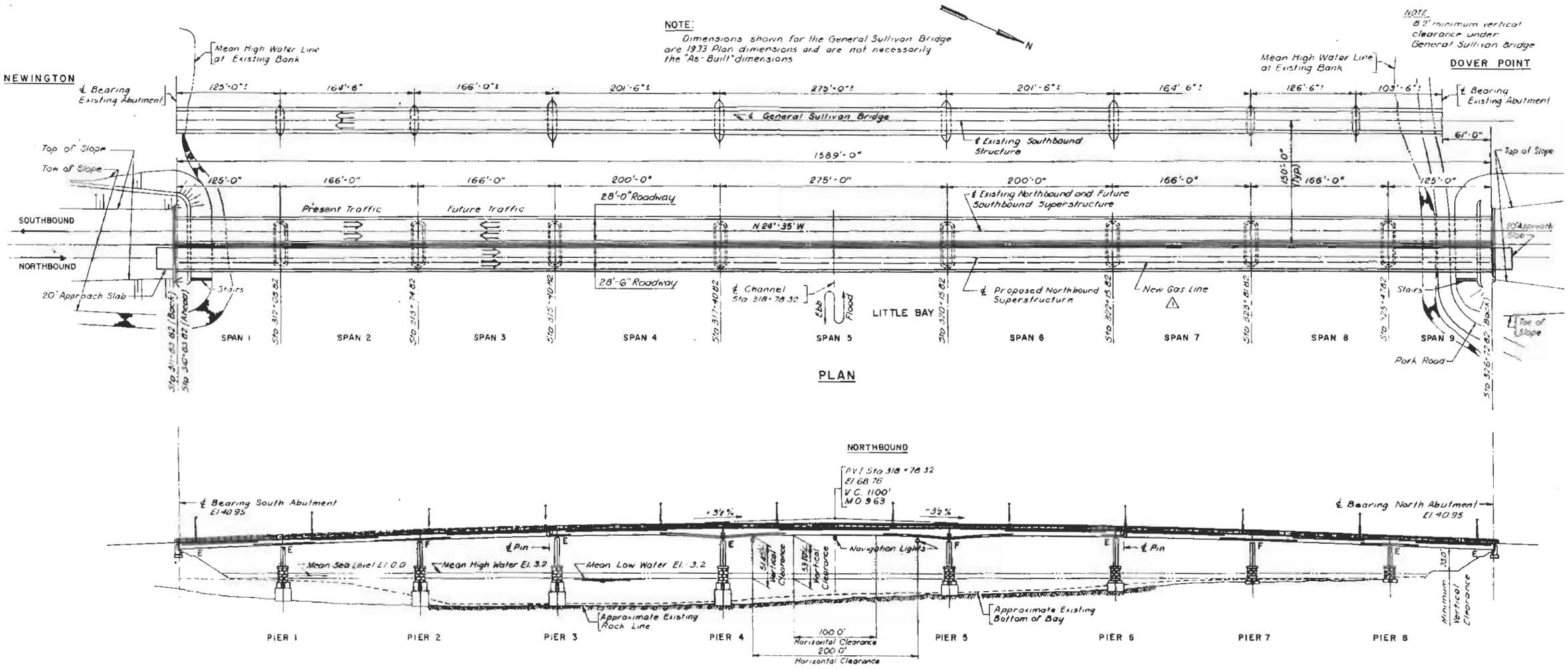
Elevation - Concrete Arch Bridge

N.T.S.

Vanasse Hangen Brustlin, Inc.

Figure 2.4-36
Conceptual Elevations of
New Signature Bridge Alternatives

New Hampshire DOT
Department of Transportation



* Clearance dimensions in this figure shown to mean low water.

Note:
Figures on this sheet are from the General Plan and Elevation, NHDOT Project No. P-2222-D, Contract #1, U.S. Route 4, N.H. Rte 16 and Spaulding Turnpike over Little Bay prepared by Hardesty & Hanover, Inc. dated March, 1982.

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 2.4-37
Existing Little Bay Bridges
Plan and Elevation

Newington - Dover, NH NHS-027-1(37)/11238

Summary of Roadway and Bridge Impacts (Eight Lanes)

IMPACTS	UNIT OF MEASUREMENT	NO BUILD	ROADWAY SEGMENT NEWINGTON			BRIDGE SEGMENT WIDEN WEST		ROADWAY SEGMENT DOVER	
			ALT 10A	ALT 12A	ALT 13	Remove GSB	Rehab GSB	ALT 2	ALT 3
WATER QUALITY, AQUATIC LIFE, & FISHERIES	Number of Perennial Stream Crossings	0	1	1	1	0	0	0	0
	Length of Perennial Stream Crossings (Feet)	0	420	330	290	0	0	0	0
	Number of Intermittent Stream Crossings	0	0	0	0	0	0	0	0
	Length of Intermittent Stream Crossings (Feet)	0	0	0	0	0	0	0	0
GROUNDWATER QUALITY	Stratified-Drift Aquifer Under New Roadway Area (Acres)	0	4.0	4.0	4.6	1.2	1.6	8.1	8.3
	Number of Well Head Protection Area (WHPA) crossings	0	0	0	0	0	0	0	0
FLOODPLAINS	Floodplain Area Impacted (Acres)	0	0	0	0	0.4	0.4	1.5	0.8
	Floodplain Volume Impacts (Acre-feet)	0	0	0	0	2.7	2.7	1.5	1.2
WETLANDS	TOTAL Wetland Impacted (Acres)	0	13.6	12.8	11.6	1.1	0.9	8.2	7.9
PEM		0	4.7	4.7	3.2	0.2	0.2	2.6	2.5
PFO		0	6.7	6.4	6.8	0.2	0.2	5.4	5.4
POW		0	0	0	0	0	0	0	0
PSS		0	2.2	1.7	1.6	0	0	0.1	0
E1/E2		0	0	0	0	0.6	0.5	0.1	0
THREATENED & ENDANGERED SPECIES	Number of Populations Impacted	0	0	0	0	0	0	0	0
VISUAL	Impacts to Views from and to the Highway (Qualitative)	N/A	Mod	Mod	Low/Mod	Low	Low	Mod	Mod
ARCHAEOLOGICAL	Number of Sensitive Areas Affected (Native American / Historic)	0	9	11	8	5	6	9	8
	Verified Sites and Cemetaries (ac)	0	0	0.03	0	0.2	0.2	0.01	0
	Exhibits Sensitivity (ac)	0	6.6	9.5	5.3	1.8	1.9	12.6	14.4
	Exhibits Probable Sensitivity (ac)	0	23.1	23.9	20.4	3.5	2.8	0.6	0.6
HISTORICAL	Number of Potentially Eligible or Listed Sites Impacted (Adverse Effect)	0	3	3	3	1	1	1	1
RIGHT-OF-WAY DISPLACEMENT	Number of Residential Total Property Acquisitions	0	1	0	0	0	0	0	0
	Number of Business Total Property Acquisitions	0	0	0	0	1	1	1	1
PUBLIC PARKS & RECREATIONAL LAND[1]	Number of Affected Recreational 4(f) Properties	0	0	0	0	1	1	1	1
	Area of Affected Recreational 4(f) Properties (Acres)	0	0	0	0	0.002	0.002	0.4	0.4
PETROLEUM & HAZARDOUS MATERIALS	Number of Potentially Contaminated Properties Impacted	0	19	19	19	0	0	1	1
FARMLANDS	Active Farmlands Impacted (Acres)	0	0	0	0	0	0	0	0
Important Farmland Soils (Acres)	Prime	0	3.8	7.8	2.7	0	0	0	0
	Unique	0	0	0	0	0	0	0	0
	Statewide	0	0	1.5	0	0	0	0	0
	Local	0	0.01	0.01	0.01	0	0	0	0
WILDLIFE HABITAT[2]	High Value Habitat Impacted (Acres)	0	24.9	26.7	20.9	2.3	2.6	3.6	3.7
Riparian Areas	Riparian Impact Areas (Acres)	0	6.8	6.9	4.6	0	0	0	0
Unfragmented Lands (>25 acres)	Impacts to Unfragmented Lands (Acres)	0	12.0	13.1	9.0	0	0	0	0
HYDRODYNAMICS	Change in Tidal Flow Characteristics	0				Minimal	Minimal		
AIR	Microscale CO Exceedances (2025)	0	0	0	0	0	0	0	0
NOISE	Number of Receptors Exceeding FHWA Abatement Criteria	0	1	1	1	0	0	85	85

NOTES:
1 Hilton Park is located in the Bridge Segment of the study area. Bayview Park is located in the Dover portion.
2 High Value Habitat and other wildlife habitat measures are based on mapping by NHF&GD (Coarse Filter Analysis).

Preferred Alternative

Figure 2.5-1
Summary of Environmental Impacts

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Newington - Dover , NH 11238

Summary of Costs for the Newington - Dover 6-lane Alternatives

COST FACTORS AND TRANSPORTATION DATA		ROADWAY SEGMENT NEWINGTON			BRIDGE SEGMENT		ROADWAY SEGMENT DOVER		COMBINED SEGMENT COMPARISON RANGE		
					WIDEN LITTLE BAY BRIDGE (LBB) TO THE WEST & REHABILITATE GENERAL SULLIVAN BRIDGE (GSB) FOR USE AS MULTI-USE PATH	WIDEN LITTLE BAY BRIDGE (LBB)TO THE WEST, INCLUDE MULTI-USE PATH AND REMOVE GENERAL SULLIVAN BRIDGE (GSB)			MINIMUM ROADWAY LENGTH / NUMBER OF BRIDGES	MAXIMUM ROADWAY LENGTH / NUMBER OF BRIDGES	UNIT
		ALT 10A	ALT 12A	ALT 13	LBB w /GSB	LBB w/o GSB	ALT 2	ALT 3	(ALT 13, LBB w/o GSB, ALT 2)	(ALT 12A, LBB w/ GSB, ALT 3)	
TRANSPORTATION DATA	LENGTH OF FREEWAY (LANE MILES)	9.5	9.5	9.5	3.7	3.7	6.8	6.8	**20.0**	**20.0**	LANE MILES
	LENGTH OF RAMPS (LANE MILES)	2.3	2.3	2.5	0	0	2.3	2.4	**4.8**	**4.7**	LANE MILES
	LENGTH OF LOCAL ROADWAYS (LANE MILES)	6.2	6.6	5.0	1.1	1.1	4.0	4.6	**10.1**	**12.3**	LANE MILES
	TOTAL LENGTH OF IMPROVEMENTS (LANE MILES)	**18.0**	**18.4**	**17.0**	**4.8**	**4.8**	**13.1**	**13.8**	**34.9**	**37.0**	LANE MILES
	NUMBER OF BRIDGES	**3**	**7**	**1**	**1**	**1**	**1**	**2**	**3**	**10**	EACH
COST FACTORS	**ALL COSTS ARE IN MILLIONS OF DOLLARS (FY 2005)**								LOWEST COMBINED SEGMENT COST (ALT 13, LBB w/o GSB, ALT 2)	HIGHEST COMBINED SEGMENT COST (ALT 12A, LBB w/ GSB, ALT 3)	**$**
ROADWAY COST	ALL ROADWAY COSTS ASSOCIATED w/ FREEWAY, RAMPS & LOCAL ROADS	32.8	34.9	30.3	10.4	10.4	29.6	29.8	70.3	75.1	MILLIONS
RAIL ACCOMMODATION COST (1)	ALL ROADWAY AND BRIDGE COSTS ASSOCIATED WITH ACCOMMODATING PEASE SPUR	1.1	1.9	0.1					0.1	1.9	MILLIONS
	TOTAL ROADWAY AND PEASE SPUR ACCOMMODATION COSTS	**33.9**	**36.8**	**30.4**	**10.4**	**10.4**	**29.6**	**29.8**	**70.4**	**77.0**	MILLIONS
BRIDGE COST	COST FOR ALL BRIDGES (EXCEPT LITTLE BAY, GENERAL SULLIVAN, AND PEASE SPUR)	11.8	14.6	8.4	1.1	1.1	6.1	8.9	15.6	24.6	MILLIONS
	WIDEN LITTLE BAY BRIDGE TO SIX LANES				46.5	54.7			54.7	46.5	MILLIONS
	REHABILITATE GENERAL SULLIVAN BRIDGE FOR PEDESTRIAN / BICYCLE USE				23.0				0.0	23.0	MILLIONS
	REMOVE GENERAL SULLIVAN BRIDGE					5.0			5.0	0.0	MILLIONS
	TOTAL BRIDGE COST	**11.8**	**14.6**	**8.4**	**70.6**	**60.8**	**6.1**	**8.9**	**75.3**	**94.1**	MILLIONS
ROADWAY AND BRIDGE COST TOTAL		**45.7**	**51.4**	**38.8**	**81.0**	**71.2**	**35.7**	**38.7**	**145.7**	**171.1**	MILLIONS
PRELIMINARY ENGINEERING	COST ASSOCIATED WITH DESIGN ENGINEERING, GEOTECHNICAL EVALUATION	3.7	4.1	3.1	6.5	5.7	2.9	3.1	**11.7**	**13.7**	MILLIONS
RIGHT OF WAY COSTS (2)	ESTIMATED COST FOR RIGHT OF WAY ACQUISITIONS	2.1	2.2	1.0	0.0	0.0	1.1	1.2	**2.1**	**3.4**	MILLIONS
TOTAL SEGMENT COST		**51.5**	**57.7**	**42.9**	**87.5**	**76.9**	**39.7**	**43.0**	**159.5**	**188.2**	MILLIONS
BUS COSTS (3)	COMBINATION OF THREE BUS ALTERNATIVES (ALTERNATIVES 1,2,3)	**5.0**							**5.0**	**5.0**	MILLIONS
RAIL COSTS (4)	RANGE OF RECOMMENDED NEAR TERM AND FUTURE RAIL SERVICE	**1.7 TO 13.5**							**1.7** #	**1.7** #	MILLIONS
PARK AND RIDE COSTS (5)	COMBINATION OF TWO PARK AND RIDE LOTS IN ROCHESTER AND DOVER	**3.6**							**3.6**	**3.6**	MILLIONS
MITIGATION AND ENHANCEMENT COSTS	WETLAND CREATION, RESTORATION, PRESERVATION. (INCLUDING RIGHT OF WAY AND CONST COST)	**6.0**							**6.0**	**6.0**	MILLIONS MILLIONS
RANGE OF TOTAL COSTS									**175.8**	**204.5**	MILLIONS

w/ NEAR TERM RAIL COST ALTERNATIVE 1 C

(1) THE **RAIL ACCOMMODATION COST** FOR NEWINGTON ALTERNATIVES 10A, 12A AND 13 ARE FOR ONLY THOSE NECESSARY ROADWAY ELEMENTS (BRIDGE, EXCAVATION AND DRAINAGE COSTS) THAT NEED TO BE CONSTRUCTED AS PART OF THESE ALTERNATIVES TO ALLOW FOR THE OPERATION OF THE PEASE SPUR, IF REACTIVATED. FOR ALTERNATIVE 13, THE COST TO ACCOMMODATE THE SPUR IS THE COST ASSOCIATED WITH THE MEDIAN PIER SUBSTRUCTURE ONLY ($0.1 MILLION), NO OTHER ROADWAY ELEMENTS NEED TO BE CONSTRUCTED AS PART OF ALTERNATIVE 13 TO ACCOMMODATE THE RR SPUR. IF THE SPUR IS REACTIVATED, THE RAIL CAN BE ELEVATED (OVERPASS) WITHOUT SIGNIFICANTLY IMPACTING THE OPERATION OF THE TURNPIKE (ESTIMATED COST IS $4.4 MILLION).

(2) ESTIMATED COST FOR RIGHT OF WAY ACQUISITIONS (BASED UPON 2004 MUNICIPAL ASSESSMENT RECORDS AND AVERAGE LAND VALUES IN NEWINGTON AND DOVER.) DOES NOT INCLUDE APPRAISAL OR OTHER ADMINISTRATIVE COSTS

(3) COSTS ASSOCIATED WITH IMPROVING BUS SERVICE IN SEACOAST AREA INCLUDE A COMBINATION OF ALTERNATIVES: BUS ALTERNATIVE 1 @ $0.4 MILLION; BUS ALTERNATIVE 2 @ $0.4 MILLION; BUS ALTERNATIVE 3 @ $4.1 MILLION. IN ADDITION, THE COST ASSOCIATED WITH AN ENHANCEMENT OF THE EXISTING BUS TRANSFER POINT AT THE FOX RUN MALL IS $110,000.

(4) COSTS ASSOCIATED WITH IMPROVING RAIL SERVICE INCLUDE A RANGE OF ALTERNATIVES: FOR NEAR TERM, ALTERNATIVE 1C IS RECOMMENDED WHICH EXPANDS THE EXISTING *DOWNEASTER* SERVICE ($1.7 MILLION); ALTERNATIVES 1A &1B INVOLVE FUTURE EXPANSION OF SERVICE INTO DOVER AND ROCHESTER (RANGE OF FUTURE COSTS ARE $11.3 TO $11.8 MILLION)

(5) THE COSTS ASSOCIATED WITH THE CONSTRUCTION OF A PARK AND RIDE LOT IN DOVER ARE $2.55 MILLION. THE COSTS FOR THE PARK AND RIDE LOT IN ROCHESTER RANGES FROM $1.0 TO $1.1 MILLION DEPENDING UPON WHICH SITE IS SELECTED.

SUMMARY OF COSTS 6-LANE ALTERNATIVES
FIGURE 2.6-1

Newington - Dover , NH 11238

Summary of Costs for the Newington - Dover 8-lane Alternatives

COST FACTORS AND TRANSPORTATION DATA		ROADWAY SEGMENT NEWINGTON			BRIDGE SEGMENT		ROADWAY SEGMENT DOVER		COMBINED SEGMENT COMPARISON RANGE		
					WIDEN LITTLE BAY BRIDGE (LBB) TO THE WEST & REHABILITATE GENERAL SULLIVAN BRIDGE (GSB) FOR USE AS MULTI-USE PATH	WIDEN LITTLE BAY BRIDGE (LBB)TO THE WEST, INCLUDE MULTI-USE PATH AND REMOVE GENERAL SULLIVAN BRIDGE (GSB)			MINIMUM ROADWAY LENGTH / NUMBER OF BRIDGES	MAXIMUM ROADWAY LENGTH / NUMBER OF BRIDGES	
		ALT 10A	ALT 12A	ALT 13	LBB w /GSB	LBB w/o GSB	ALT 2	ALT 3	(ALT 13, LBB w/o GSB, ALT 2)	(ALT 12A, LBB w/ GSB, ALT 3)	
TRANSPORTATION DATA	LENGTH OF FREEWAY (LANE MILES)	10.6	10.6	10.6	5.0	5	7.6	7.6	**23.2**	**23.2**	LANE MILES
	LENGTH OF RAMPS (LANE MILES)	2.3	2.1	2.5	0	0	2.5	2.4	**5.0**	**4.5**	LANE MILES
	LENGTH OF LOCAL ROADWAYS (LANE MILES)	6.2	6.6	5.0	1.1	1.1	4.1	4.6	**10.2**	**12.3**	LANE MILES
	TOTAL LENGTH OF IMPROVEMENTS (LANE MILES)	**19.1**	**19.3**	**18.1**	**6.1**	**6.1**	**14.2**	**14.6**	**38.4**	**40.0**	LANE MILES
	NUMBER OF BRIDGES	**3**	**7**	**1**	**1**	**1**	**1**	**2**	**3**	**10**	EACH
COST FACTORS	**ALL COSTS ARE IN MILLIONS OF DOLLARS (FY 2005)**								**LOWEST COMBINED SEGMENT COST (ALT 13, LBB w/o GSB, ALT 2)**	**HIGHEST COMBINED SEGMENT COST (ALT 12A, LBB w/ GSB, ALT 3)**	**$**
ROADWAY COST	ALL ROADWAY COSTS ASSOCIATED w/ FREEWAY, RAMPS & LOCAL ROADS	33.6	35.8	31.3	11.2	11.2	30.5	30.6	**73.0**	**77.6**	MILLIONS
RAIL ACCOMMODATION COST (1)	ALL ROADWAY AND BRIDGE COSTS ASSOCIATED WITH ACCOMMODATING PEASE SPUR	1.1	1.9	0.1					0.1	1.9	MILLIONS
	TOTAL ROADWAY COST	**34.7**	**37.7**	**31.4**	**11.2**	**11.2**	**30.5**	**30.6**	**73.1**	**79.5**	MILLIONS
BRIDGE COST	COST FOR ALL BRIDGES (EXCEPT LITTLE BAY, GENERAL SULLIVAN, AND PEASE SPUR)	11.7	14.7	8.4	1.8	1.8	6.1	8.9	16.3	25.4	MILLIONS
	WIDEN LITTLE BAY BRIDGE TO EIGHT LANES				55.5	63.8			63.8	55.5	MILLIONS
	REHABILITATE GENERAL SULLIVAN BRIDGE FOR PEDESTRIAN / BICYCLE USE				23.0				0.0	23.0	MILLIONS
	REMOVE GENERAL SULLIVAN BRIDGE					5.0			5.0	0.0	MILLIONS
	TOTAL BRIDGE COST	**11.7**	**14.7**	**8.4**	**80.3**	**70.6**	**6.1**	**8.9**	**85.1**	**103.9**	MILLIONS
ROADWAY AND BRIDGE COST TOTAL		**46.4**	**52.4**	**39.8**	**91.5**	**81.8**	**36.6**	**39.5**	**158.2**	**183.4**	MILLIONS
PRELIMINARY ENGINEERING	COST ASSOCIATED WITH DESIGN ENGINEERING, GEOTECHNICAL EVALUATION	**3.7**	**4.2**	**3.2**	**7.3**	**6.5**	**2.9**	**3.2**	**12.6**	**14.7**	MILLIONS
RIGHT OF WAY COSTS (2)	ESTIMATED COST FOR RIGHT OF WAY ACQUISITIONS	**2.1**	**2.2**	**1.0**	**0.0**	**0.0**	**1.1**	**1.2**	**2.1**	**3.4**	MILLIONS
TOTAL SEGMENT COST		**52.2**	**58.8**	**44.0**	**98.8**	**88.3**	**40.6**	**43.9**	**172.9**	**201.5**	MILLIONS
BUS COSTS (3)	COMBINATION OF THREE BUS ALTERNATIVES AND ENHANCED TRANSFER POINT	**5.0**							**5.0**	**5.0**	MILLIONS
RAIL COSTS (4)	RANGE OF RECOMMENDED NEAR TERM AND FUTURE RAIL SERVICE	**1.7 TO 13.5**							**1.7** #	**1.7** #	MILLIONS
PARK AND RIDE COSTS (5)	COMBINATION OF TWO PARK AND RIDE LOTS IN ROCHESTER AND DOVER	**3.6**							**3.6**	**3.6**	MILLIONS
MITIGATION AND ENHANCEMENT COSTS	WETLAND CREATION, RESTORATION, PRESERVATION. (INCLUDING RIGHT OF WAY AND CONST COST)	**6.0**							**6.0**	**6.0**	MILLIONS MILLIONS
RANGE OF TOTAL COSTS									**189.2**	**217.8**	MILLIONS

THE COLOR SHOWN IN THE SEGMENT COLUMNS ABOVE IDENTIFIES THE DEPARTMENT'S **PREFERRED ALTERNATIVE.**

w/ NEAR TERM RAIL COST ALTERNATIVE 1 C

(1) THE **RAIL ACCOMMODATION COST** FOR NEWINGTON ALTERNATIVES 10A, 12A AND 13 ARE FOR ONLY THOSE NECESSARY ROADWAY ELEMENTS (BRIDGE, EXCAVATION AND DRAINAGE COSTS) THAT NEED TO BE CONSTRUCTED AS PART OF THESE ALTERNATIVES TO ALLOW FOR THE OPERATION OF THE PEASE SPUR, IF REACTIVATED. FOR ALTERNATIVE 13, THE COST TO ACCOMMODATE THE SPUR IS THE COST ASSOCIATED WITH THE MEDIAN PIER SUBSTRUCTURE ONLY ($0.1 MILLION), NO OTHER ROADWAY ELEMENTS NEED TO BE CONSTRUCTED AS PART OF ALTERNATIVE 13 TO ACCOMMODATE THE RR SPUR. IF THE SPUR IS REACTIVATED, THE RAIL CAN BE ELEVATED (OVERPASS) WITHOUT SIGNIFICANTLY IMPACTING THE OPERATION OF THE TURNPIKE (ESTIMATED COST IS $4.4 MILLION).

(2) ESTIMATED COST FOR RIGHT OF WAY ACQUISITIONS (BASED UPON 2004 MUNICIPAL ASSESSMENT RECORDS AND AVERAGE LAND VALUES IN NEWINGTON AND DOVER.) DOES NOT INCLUDE APPRAISAL OR OTHER ADMINISTRATIVE COSTS

(3) COSTS ASSOCIATED WITH IMPROVING BUS SERVICE IN SEACOAST AREA INCLUDE A COMBINATION OF ALTERNATIVES: BUS ALTERNATIVE 1 @ $0.4 MILLION; BUS ALTERNATIVE 2 @ $0.4 MILLION; BUS ALTERNATIVE 3 @ $4.1 MILLION. IN ADDITION, THE COST ASSOCIATED WITH AN ENHANCEMENT OF THE EXISTING BUS TRANSFER POINT AT THE FOX RUN MALL IS $110,000.

(4) COSTS ASSOCIATED WITH IMPROVING RAIL SERVICE INCLUDE A RANGE OF ALTERNATIVES: FOR NEAR TERM, ALTERNATIVE 1C IS RECOMMENDED WHICH EXPANDS THE EXISTING *DOWNEASTER* SERVICE ($1.7 MILLION); ALTERNATIVES 1A &1B INVOLVE FUTURE EXPANSION OF SERVICE INTO DOVER AND ROCHESTER (RANGE OF FUTURE COSTS ARE $11.3 TO $11.8 MILLION)

(5) THE COSTS ASSOCIATED WITH THE CONSTRUCTION OF A PARK AND RIDE LOT IN DOVER ARE $2.55 MILLION. THE COSTS FOR THE PARK AND RIDE LOT IN ROCHESTER RANGES FROM $1.0 TO $1.1 MILLION DEPENDING UPON WHICH SITE IS SELECTED.

PREFERRED ALTERNATIVE COST (MILLIONS)	
NEWINGTON SEGMENT (ALT 13)	44.0
BRIDGE SEGMENT (LBB w/GSB)	98.8
DOVER SEGMENT (ALT 3)	43.9
BUS SERVICE	5.0
RAIL SERVICE	1.7
PARK AND RIDE LOTS	3.6
MITIGATION	6.0
TOTAL	203.0

SUMMARY OF COSTS 8-LANE ALTERNATIVES
FIGURE 2.6-2

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
EXIT 1
EXIT 2
EXIT 3
EXIT 4N
EXIT 4
SPAULDING TURNPIKE
16
4
ARBORETUM DR
PEASE SPUR RR
COLEMAN DR
NIMBLE HILL RD
FOX RUN RD
WOODBURY AVE
SHATTUCK WAY
PATTERSON LN
GUILFORD RR NEWINGTON BRANCH

765
2290
1520
125
1645
3055
190
1495
825
40
175
1670
3880
95
3975
4155
1765
180
70
75
150
330
130

50 210 585 0 180 190 505

0 5 0 10 0 5 0 30 0 5 0 5

25 20 0 5 715 25 45 175 70 30 0 5

320 70 390 0 255 305 55

175 55 10 20 650 50 65 155 35 20 5 20

180 25 45 70 730 25 180 210 20 20 25 10

115 65 40 35 5 10

0 0 5 0

Vanasse Hangen Brustlin, Inc.

Figure 3.2-1 - Newington
2003 Existing Conditions
Weekday AM Peak Hour
Sheet 1 of 2

0 375 750 Feet

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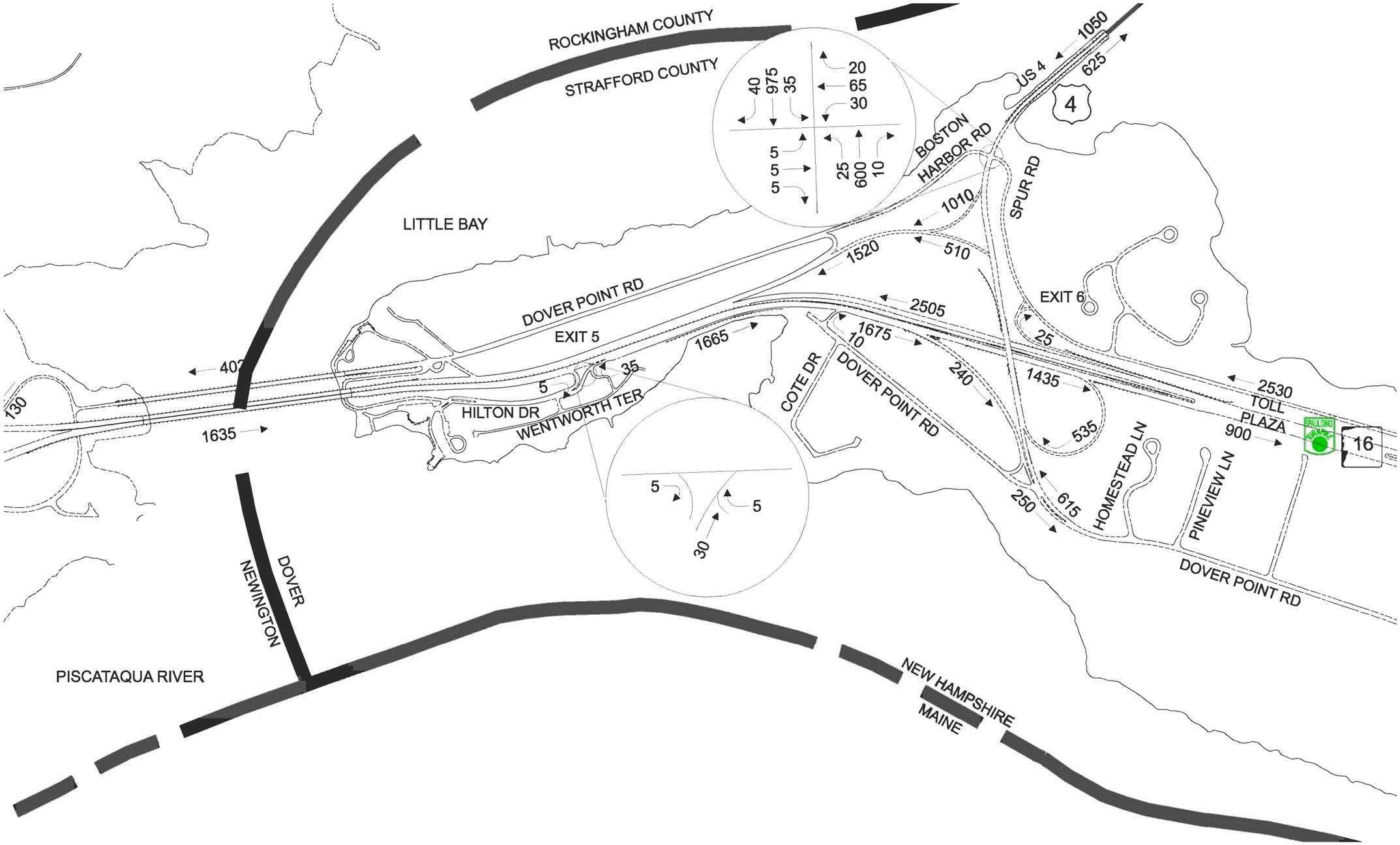


N

0 375 750 Feet

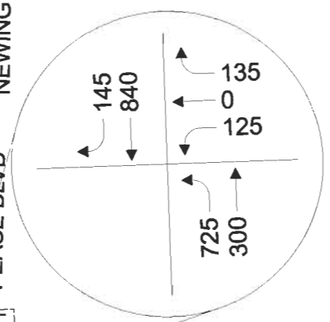
Vanasse Hangen Brustlin, Inc.

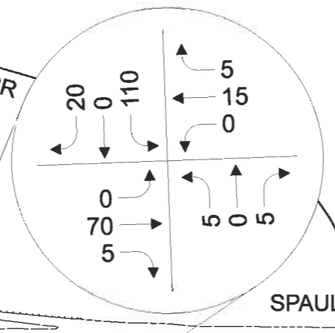
Figure 3.2-1 - Dover
2003 Existing Conditions
Weekday AM Peak Hour
Sheet 2 of 2

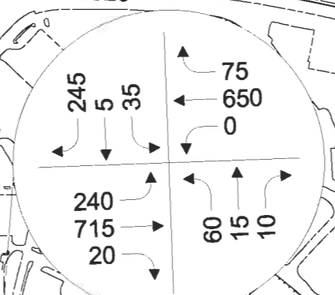
Date Created7/19/2008 j:\51425\cad\te\phase3\DEIS\fig030201b.dgn

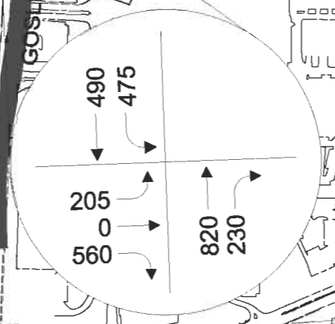
New Hampshire DOT
Department of Transportation

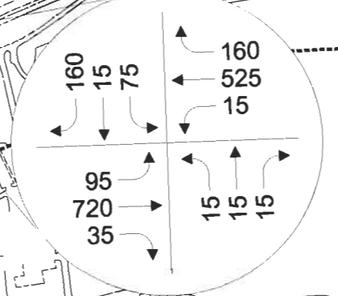
PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
EXIT 1
260
1330
2615
705
SPAULDING TURNPIKE
16
4
3320
1590
ARBORETUM DR
PEASE SPUR RR
355
3155
715
190
FOX RUN RD
EXIT 3
2305
760
3915
135
EXIT 4N
2440
2420
4050
140
EXIT 4
160
40
190
SHATTUCK WAY
COLEMAN DR
NIMBLE HILL RD
240
220
150
WOODBURY AVE
PATTERSON LN
GUILFORD RR NEWINGTON BRANCH

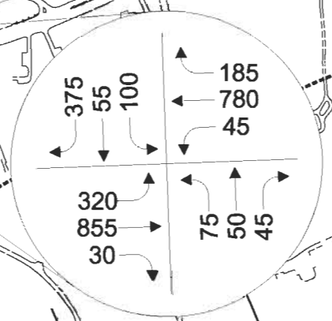


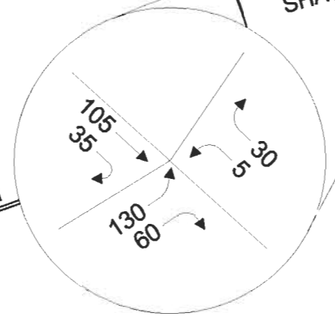


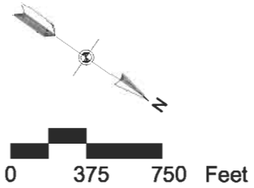












Vanasse Hangen Brustlin, Inc.

Figure 3.2-2 - Newington
2003 Existing Conditions
Weekday PM Peak Hour
Sheet 1 of 2

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig030202a.dgn

New Hampshire DOT
Department of Transportation

ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
PISCATAQUA RIVER
DOVER
NEWINGTON
NEW HAMPSHIRE
MAINE
DOVER POINT RD
EXIT 5
EXIT 6
HILTON DR
WENTWORTH TER
COTE DR
DOVER POINT RD
BOSTON HARBOR RD
SPUR RD
US 4
4
TOLL PLAZA
SPAULDING TURNPIKE
16
HOMESTEAD LN
PINEVIEW LN
DOVER POINT RD

35 830 25
15 25 10
15 0 5
70 1120 25

5 5 35

150 227 4070 40 5 4105 1110 265 845 890 1150 1160 5 4110 40 710 3400 1200 2375 1025 715 470

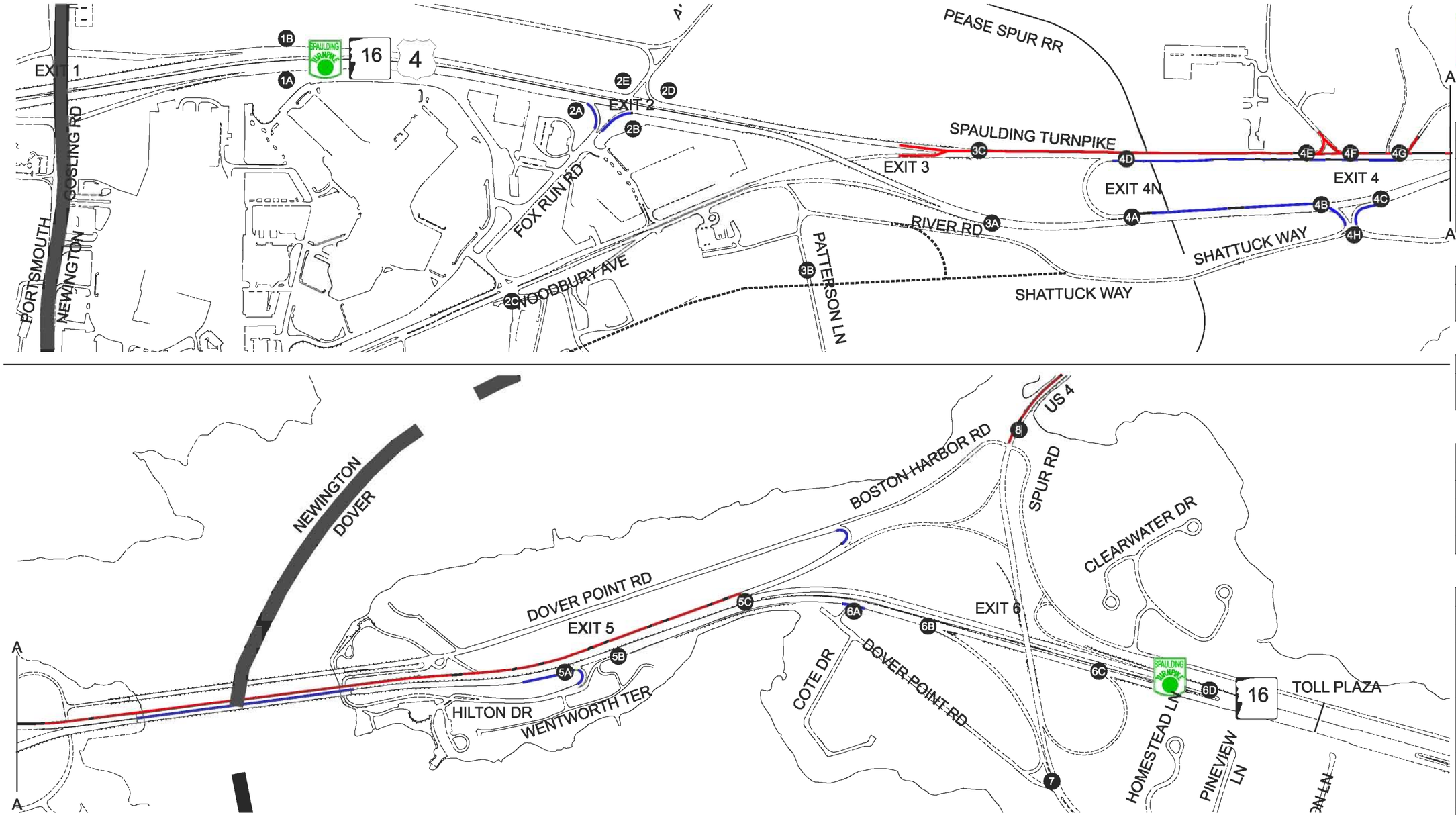
0 375 750 Feet

N

Vanasse Hangen Brustlin, Inc.

Figure 3.2-2 - Dover
2003 Existing Conditions
Weekday PM Peak Hour
Sheet 2 of 2

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig030202b.dgn



New Hampshire DOT
Department of Transportation

Arterial LOS

Node		2003 LOS
From	To	
2C	3C	D
3B	4H	A
7	NORTH	D
8	WEST	E

Signalized Intersection LOS

Node	2003 LOS
2C	B
8	C

Unsignalized Intersection LOS

Node	2003 LOS
3B	A
4H	B

Weave Analysis LOS

Node		2003 LOS
From	To	
4G	4F	E
4E	4D	F
4A	4B	B
6A	6B	B

Ramp Junction LOS

Node	2003 LOS
2A	B
2B	B
3A	B
3C	E
4A	B
4B	B
4C	B
4D	D
4E	E
4F	F
4G	F
5A	B
5B	B
6A	B
6B	B
6C	B
6D	B

Legend:

CAPACITY DEFICIENCY

SUBSTANDARD GEOMETRICS

Freeway LOS

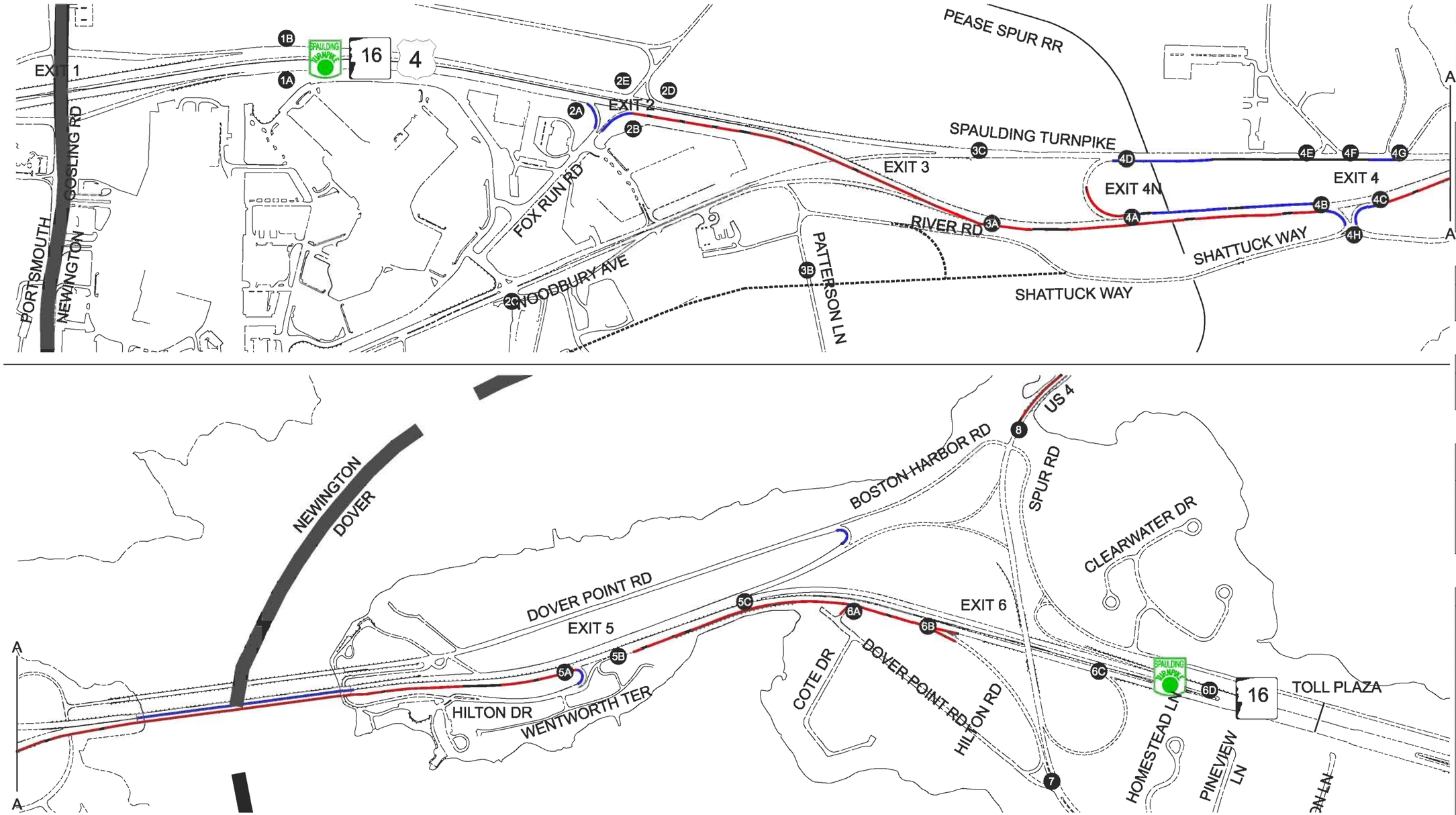
Node		2003 LOS
From	To	
Spaulding Turnpike NB		
1A	2A	B
2B	3A	B
4A	4B	C
4C	5A	B
5B	6A	B
6C	TOLL	A

Freeway LOS

Node		2003 LOS
From	To	
Spaulding Turnpike SB		
TOLL	6D	C
6D	5C	C
5C	4G	E
4E	3C	E
3C	2D	D
2E	1B	D

Vanasse Hangen Brustlin, Inc.

Figure 3.2-3
Level of Service Summary
2003 Existing Conditions
Weekday AM Peak Hour



New Hampshire DOT
Department of Transportation

Arterial LOS

Node		2003 LOS
From	To	
2C	3C	D
3B	4H	C
7	NORTH	D
8	WEST	E

Signalized Intersection LOS

Node	2003 LOS
2C	B
8	C

Unsignalized Intersection LOS

Node	2003 LOS
3B	B
4H	B

Weave Analysis LOS

Node		2003 LOS
From	To	
4G	4F	C
4E	4D	D
4A	4B	E
6A	6B	E

Ramp Junction LOS

Node	2003 LOS
2A	D
2B	C (F)*
3A	D (F)*
3C	C
4A	F
4B	D
4C	D
4D	C
4E	C
4F	C
4G	C
5A	D
5B	D
6A	E
6B	E
6C	D
6D	A

* Isolated facility analyses do not account for impacts associated with system deficiencies and failures. Field observations have confirmed that ramp nodes 2B & 3A and freeway segment 2B to 3A are regularly blocked by the rolling queue on the Turnpike, resulting from system capacity issues at Exits 4 through 6

Legend:

CAPACITY DEFICIENCY

SUBSTANDARD GEOMETRICS

Freeway LOS

Node		2003 LOS
From	To	
Spaulding Turnpike NB		
1A	2A	D
2B	3A	D (E)*
4A	4B	E
4C	5A	E
5B	6A	E
6C	TOLL	C

Freeway LOS

Node		2003 LOS
From	To	
Spaulding Turnpike SB		
TOLL	6D	B
6D	5C	B
5C	4G	C
4E	3C	C
3C	2D	B
2E	1B	B

N

0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

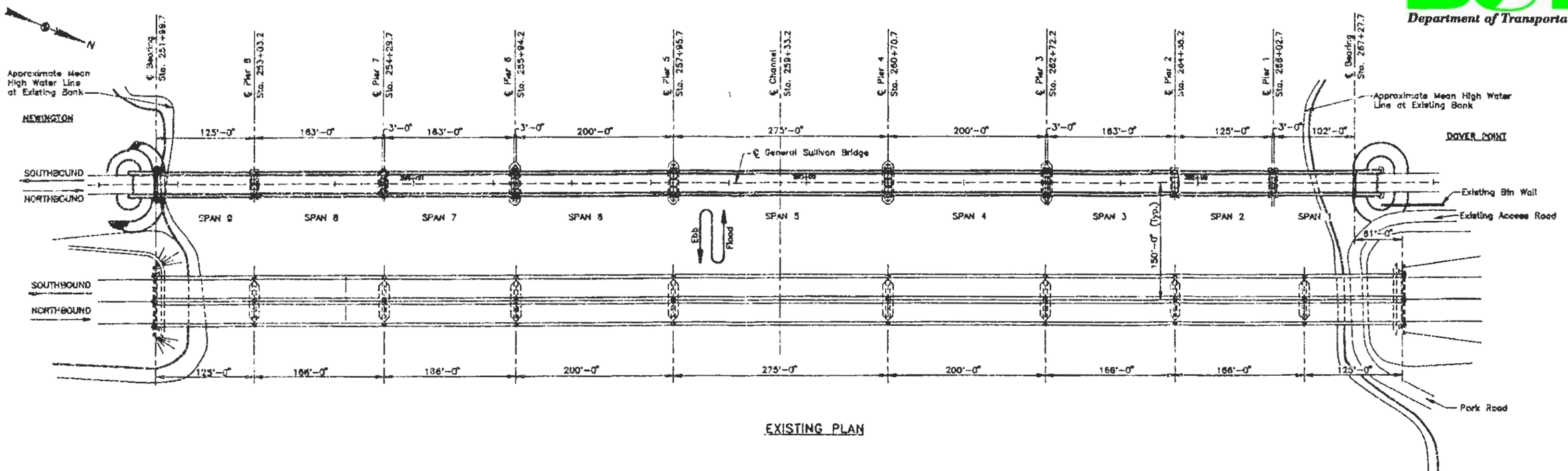
Figure 3.2-4
Level of Service Summary
2003 Existing Conditions
Weekday PM Peak Hour

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig030204.dgn

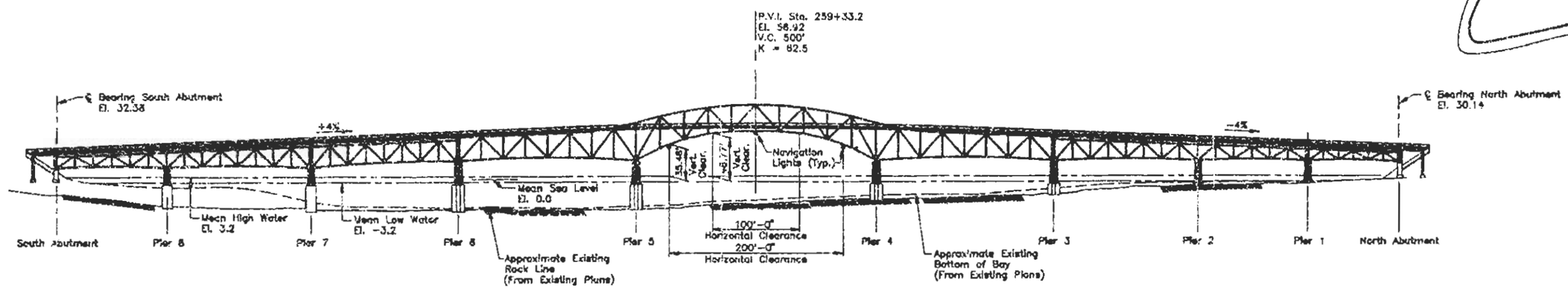
INTERSECTION		Spaulding Tpk Exit 1 / Gosling Rd	Spaulding Tpk Exit 1 NB / Gosling Rd	Spaulding Tpk Exit 1 SB / Gosling Rd	Between Exits 1 - 2	Spaulding Tpk Exit 2 / Fox Run Rd	Spaulding Tpk Exit 2 NB / Fox Run Rd	Spaulding Tpk Exit 2 SB / Fox Run Rd	Between Exits 2 - 3	Spaulding Tpk Exit 3 / Woodbury Ave	Spaulding Tpk Exit 3 NB / Woodbury Ave	Spaulding Tpk Exit 3 SB / Woodbury Ave	Between Exits 3 - 4	Spaulding Tpk Exit 4	Spaulding Tpk Exit 4N Turnaround	Spaulding Tpk Exit 4 / Nimble Hill Rd	Spaulding Tpk Exit 4 / River Rd	Spaulding Tpk Exit 4S Turnaround	Between Exit 4 - Bridge	Spaulding Tpk on Little Bay Bridge	Between Bridge - Exit 5	Spaulding Tpk Exit 5	Spaulding Tpk Exit 5 / Hilton Dr	Spaulding Tpk Exit 5 / Wentworth Ter	Between Exits 5 - 6	Spaulding Tpk Exit 6	Spaulding Tpk Exit 6N / Dover Pt Rd	Spaulding Tpk Exit 6W / Rt 4	Spaulding Tpk Exit 6 / Spur Rd	Between Exit 6 - Toll	Woodbury Ave / Gosling Rd	Woodbury Ave / Fox Run Rd	Woodbury Ave / River Rd	Gosling Rd / Industrial Access Rd	River Rd / Patterson Ln	River Rd / Industrial Access Rd	Dover Point Rd / Cote St	Rt 4 / Boston Hr Rd / Spur Rd / Dover Pt Rd	Along Spaulding Tpk (Dover)	Along Spaulding Tpk (Newington)	Along Woodbury Ave (Newington)	Along Gosling Rd	Along Fox Run Rd	Along River Rd	Along Nimble Hill Rd (STpk - Fox Point Rd)	Along Dover Point Rd (s/o Pineview Dr)	Along Boston Harbor Rd	Along Cote Dr	Along Route 4 (Dover)	Along Spur Rd	TOTAL	PERCENT
YEAR																																																				
1997		9	4		4	1	1		1	6		1	3	7	1	4	1		5	11	3				1	3	3	4		3	15	2						2	1	6	19	6	2		2	2	2		9		144	11%
1998		10			1	2	1			2		1	1	5	1		2		1	19	5	2		1			5	13		4	17							2		7	20	16		1	1	3	1		12		156	12%
1999		16	1	3	1	3			1	2		1	8	9	1	3	1		4	15	3	4			3	1	5	5		4	18	2	1					12		8	14	18	3	1		1	1		12	2	187	15%
2000		11	7	3	3	4			3	2		2	8	5	5	5	1	1	5	24	7	2		1		4	2	1		3	24		2					6		7	23	14	1	1		5		1	8		201	16%
2001		9	6	3	2	4	4			2			3	9	7	1	2	3	5	28	7	5			2	2	1	3		3	22	2						6		15	25	19	3	4		4			9		220	17%
2002		5			4	6			1	5			3	7	3		2	2	6	29	4	1			1	2	3	1		5	6	1						6		15	23	8	1	1	1	3	2		10	1	168	13%
2003		6	1		6	4			3	7			6	8	4	1	1	2	9	33	6	3			2	1	3	3		2	4							4	2	5	27	17	6	1	1	1	1		7		187	15%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
TYPE																																																				
Angle		2														1					1									4							3				9					1				21	2%
Rear-End		8	3	2	2	6	2		1	3			5	8	4	4	6	1	3	36	11	1				2	4	5		2	13	2	1					12		13	6	6		1		6	2		26		207	16%
Head-on																															1												1					1	1		4	0%
Sideswipe		1		1									1		2			1		2		1						1		1	1							1												13	1%
Fixed Object		3			2	2				2			2	2	2				1	7	3	2			1		2			2	3							1	2	5	3	1				1			2	1	53	4%
Other/Unknown		52	16	6	17	16	4		8	21		5	24	40	14	9	4	5	31	114	20	13		2	8	11	16	24		19	84	5	2					21	1	45	142	81	16	8	5	13	3		38	2	965	76%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
SEVERITY																																																			
Property Damage		6			3	2				6			1	4	2	1	2		3	10	2	1					4			12	3	1					12		7	9	6	2			3	1		16	2	121	10%
Personal Injury		16	5	2	3	5	2		2	7		1	5	8	3	1	3	2	11	31	5	4			4	5	5	7		4	25		1					8		9	40	24	6	4		8	1		12	1	280	22%
Pedestrian Injury																				1	1										1																		1		4	0%
Fatality																																														1				1	0%
Unknown/None		44	14	7	15	17	4		7	13		4	26	38	17	12	5	6	21	117	27	12		2	5	8	13	23		20	68	4	1					18	3	47	102	68	8	5	5	7	5	1	38		857	68%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
DAY OF WEEK																																																			
Mon-Fri		53	15	7	19	21	2		8	21		5	26	45	17	9	9	7	30	135	29	14		1	9	12	16	28		15	81	6	2					26	3	55	105	82	9	6	4	11	4	1	43	2	993	79%
Sat-Sun		13	4	2	2	3	4		1	5			6	5	5	5	1	1	5	24	6	3		1		1	6	2		9	25	1	1					12		8	46	16	7	3	1	8	3		24	1	270	21%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
SURFACE CONDITION																																																			
Dry		36	13	4	19	19	5		7	20		4	27	42	17	10	9	7	27	124	22	11			6	11	18	26		16	75	5	2					30		48	115	66	11	7	4	14	6	1	52	3	939	74%
Wet		14	4	2		4	1		2	4			5	5	5	2	1	1	5	20	8	4		1	2	1	3	3		5	26	1						7	1	9	24	26	2	2		4	1		12		217	17%
Snow/Ice		13	2	3	2	1				1		1		3		1			3	14	5	2		1	1	1	1	1		3	3	1						1	2	3	9	4	2		1	1					86	7%
Other/Unknown		3								1						1				1											2		1							3	3	2	1						3		21	2%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
WEATHER																																																			
Clear/Cloudy		44	13	4	18	20	5		6	20		4	27	45	18	12	9	8	31	130	24	12			7	12	19	28		18	90	5	2					31	1	49	127	74	14	8	5	15	6	1	57	3	1022	81%
Rain		8	2	2	2	3	1		1	4			4	3	4	1	1		2	18	6	3		1	2		2	1		3	13	1	1					5	1	8	16	18	1	1		3	1		7		150	12%
Snow/Ice		12	3	3	1	1				1		1	1	2					2	11	5	2		1		1	1	1		3	2	1						1	1	4	6	3	1			1			1		73	6%
Other/Unknown		2	1						2	1						1														1								1		2	2	3							2		18	1%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%
SEASON																																																			
Winter (Dec-Feb)		24	5	4	6	6	1		2	3		2	2	18	7	2	2	2	7	28	10	3			3	2	4	6		5	35	2						3	2	20	39	34	8	1	1	4	2		12		317	25%
Spring (Mar-May)		17	6	2	2	5	1		3	4		1	4	10	3	6	1	1	11	35	12	5		1	2	3	7	6		3	27	1	1					15	1	11	42	21	1	3		4	1		9		288	23%
Summer (Jun-Aug)		14	4		8	11	2		3	7			14	12	10	4	3	2	13	39	7	2		1	1	4	5	11		7	21	2	1					9		15	34	27	3	1	2	5	3		19	3	329	26%
Fall (Sept-Nov)		11	4	3	5	2	2		1	12		2	12	10	2	2	4	3	4	57	6	7			3	4	6	7		9	23	2	1					11		17	36	16	4	4	2	6	1	1	27		329	26%
Total		66	19	9	21	24	6	0	9	26	0	5	32	50	22	14	10	8	35	159	35	17	0	2	9	13	22	30	0	24	106	7	3	0	0	0	0	38	3	63	151	98	16	9	5	19	7	1	67	3	1263	100%

Source: New Hampshire Department of Safety, Dover Police Department, Newington Police Department, and Portsmouth Police Department.

Figure 3.2-5
Spaulding Turnpike - Crash Summary (1997-2003)



EXISTING PLAN



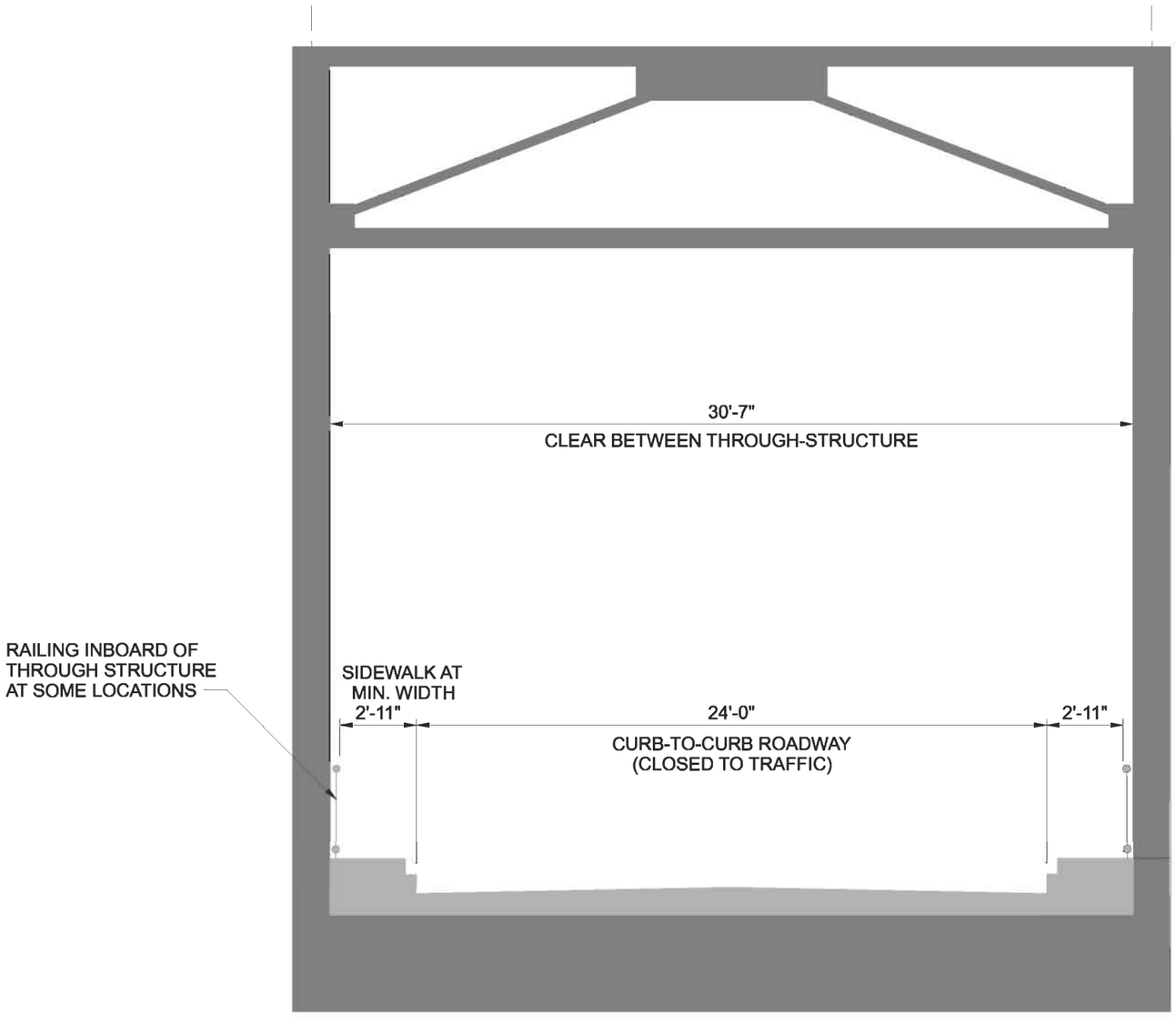
EXISTING ELEVATION

Note:
Figures on this sheet are from the Existing Plan and Elevation figure in the report: General Sullivan Bridge over Little Bay Bridges Rehabilitation Final Report prepared by Kimball Chase, Inc. dated June, 1991.

0 50 100 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.2-6
Existing General Sullivan Bridge Plan and Elevation



EXISTING CROSS SECTION

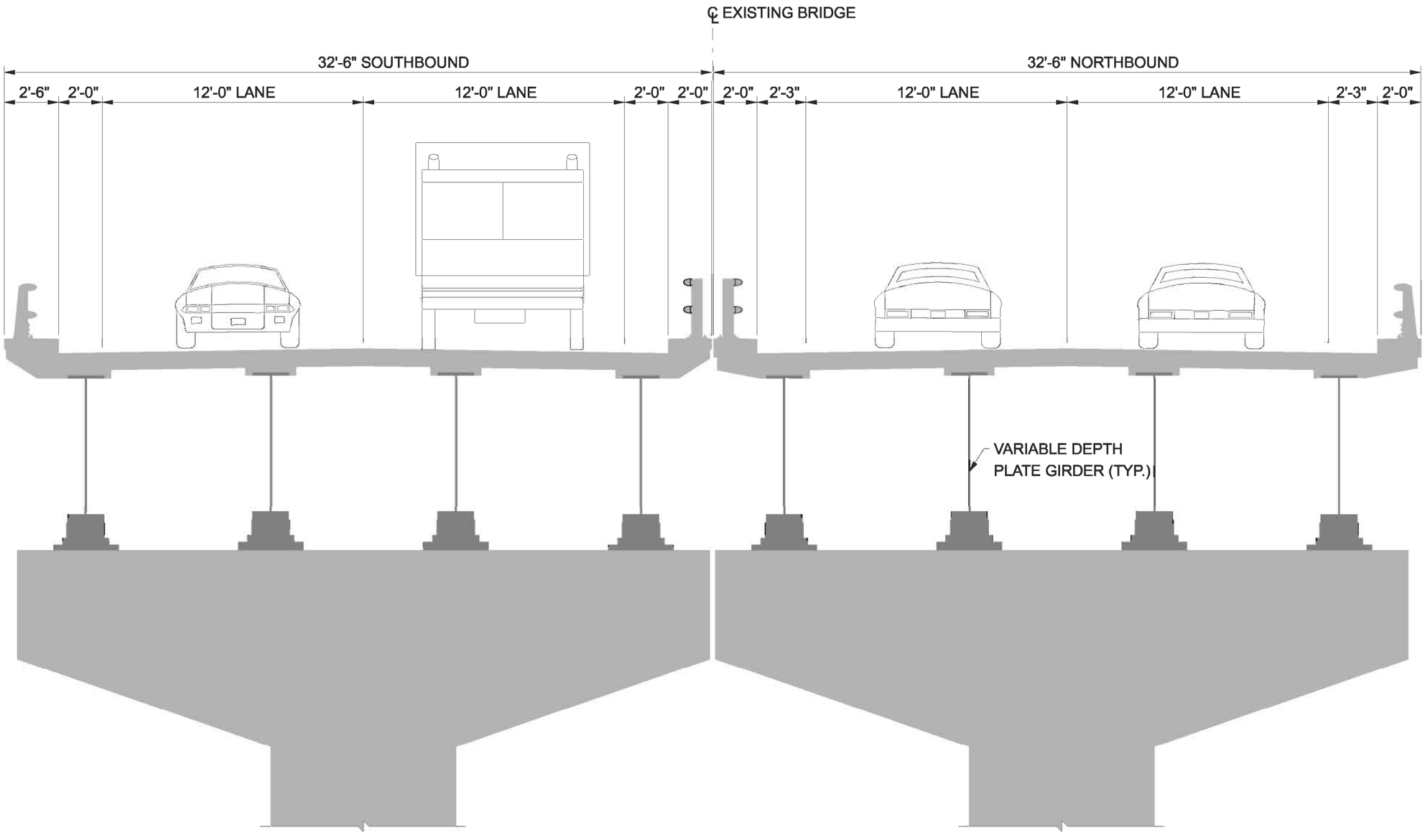
GENERAL SULLIVAN BRIDGE

0 2.5 5 Feet

Figure 3.2-7
Existing General Sullivan Bridge
Cross Section

Vanasse Hangen Brustlin, Inc.

Date Created: 7/12/2006 j:\51425\cad\ie\phasc3\DEIS\fig030207.dgn



EXISTING CROSS SECTION

LITTLE BAY BRIDGES

0 2.5 5 Feet

Figure 3.2-8
Existing Little Bay Bridges
Cross Section

Vanasse Hangen Brustlin, Inc.

Figure 3.2-9
Existing Park-and-Ride Facilities

New Hampshire DOT
Department of Transportation

Legend:

COAST Services
- Route 1
- Route 2
- Route 6
- Route 7
- Dover Points North
- Dover Points South
- Dover Points West
- Lafayette Road Trolley
- Pease Tradeport Trolley

Wildcat Transit Services
- Route 3
- Route 4
- Route 5

Commuter/Intercity Services
- C&J
- Vermont Transit

- State Line
- Town Line

N

0 6000 12000 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.2-10
Existing Bus Services

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030210.dgn

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
DOVER
NEW HAMPSHIRE
MAINE
LITTLE BAY
PISCATAQUA RIVER
BELLAMY RIVER
TRICKY'S COVE
ROYALS COVE
POMEROY COVE
DOVER POINT
BLOODY POINT
UNNAMED PONDS
FLAGSTONE BROOK
PICKERING BROOK
RAILWAY BROOK
PAUL BROOK
UNNAMED TRIBUTARY 1
UNNAMED TRIBUTARY 2
PEASE BLVD
COSTING RD
ARBORETUM DR
PEASE SPUR RR
COLEMAN DR
NIMBLE HILL RD
FOX RUN RD
RIVER RD
WOODBURY AVE
AVERY DR
SHATTUCK WAY
PISCATAQUA DR
PATTERSON LN
GUILFORD RR NEWINGTON BRANCH
BOSTON HARBOR RD
SPUR RD
CLEARWATER DR
DOVER POINT RD
HILTON DR
WENTWORTH TER
COTE DR
HILTON RD
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
TOLL PLAZA

LI MH NG A AI R C O H W I B-1 RM-12 R-20

0 750 1500 Feet

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE

NEWINGTON ZONING

- R — RESIDENTIAL DISTRICT
- C — COMMERCIAL DISTRICT
- AI — AIRPORT INDUSTRIAL DISTRICT
- I — INDUSTRIAL DISTRICT
- MH — MOBILE HOME DISTRICT
- H — HISTORIC DISTRICT
- W — WATERFRONT INDUSTRIAL DISTRICT
- A — AIRPORT DISTRICT
- O — OFFICE DISTRICT
- LI — LIGHT INDUSTRIAL
- NG — NEW HAMPSHIRE NATIONAL GUARD (NOT LOCALLY ZONED)

DOVER ZONING

- B-1 — NEIGHBORHOOD BUSINESS DISTRICT
- RM-12 — LOW-DENSITY MULTIRESIDENTIAL DISTRICT
- R-20 — LOW-DENSITY RESIDENTIAL DISTRICT

Vanasse Hangen Brustlin, Inc.

Figure 3.3-1
Zoning Districts,
Newington and Dover

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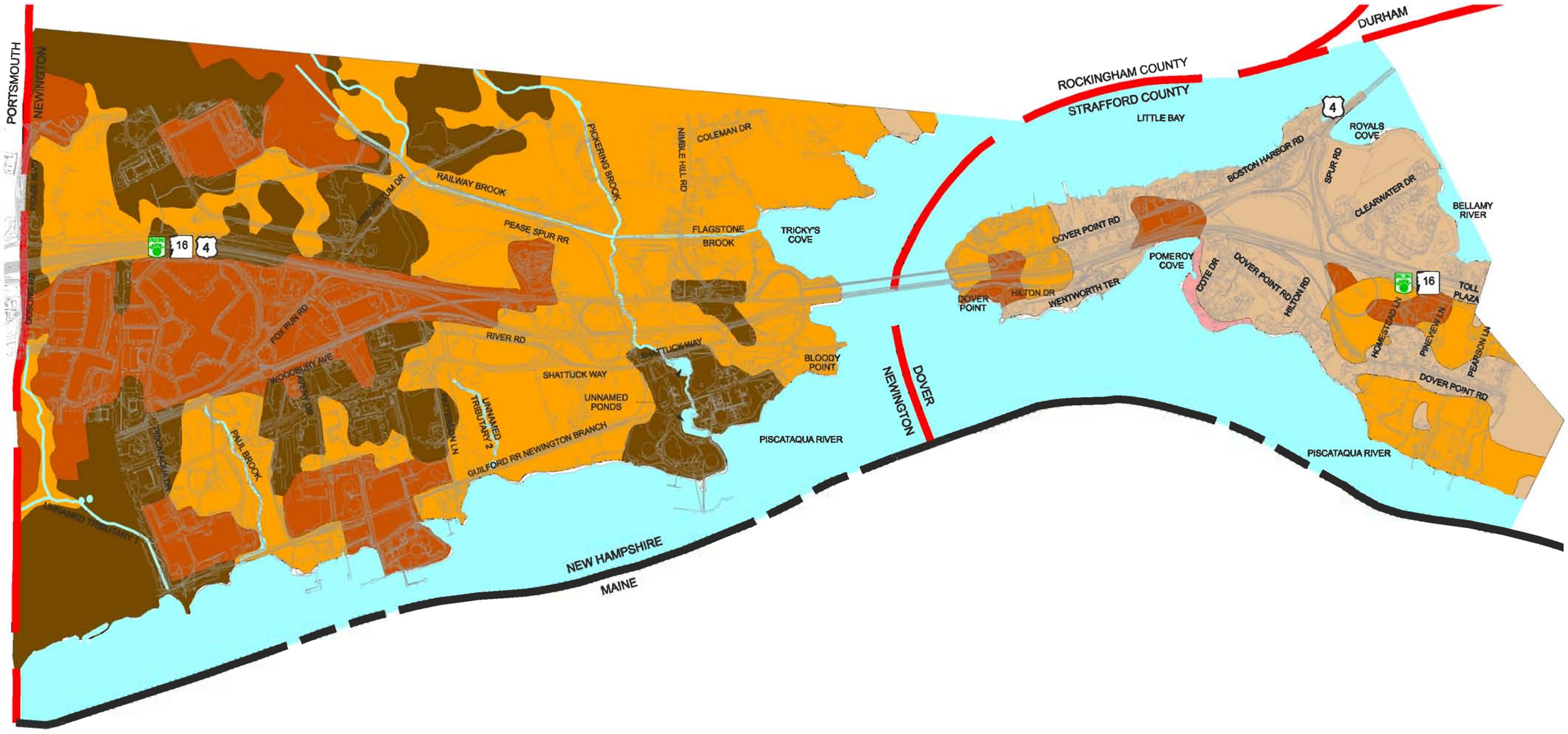
New Hampshire DOT
Department of Transportation



Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- MARINE/LACUSTRINE
- GLACIOFLUVIAL
- ANTHROPOGENIC
- ORGANIC MATERIAL
- TILL

N

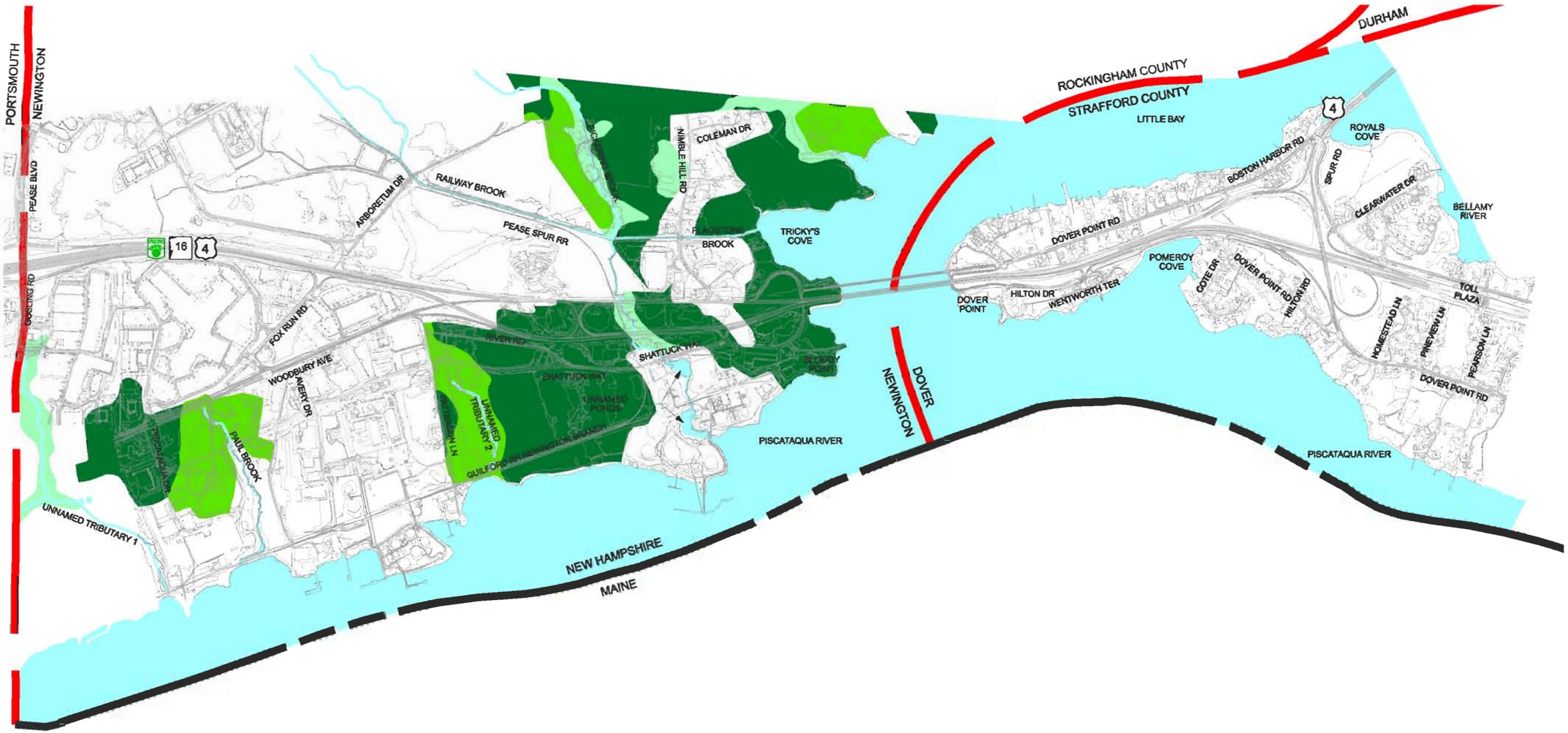
0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.4-1
Major Soil Associations

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030401.dgn

New Hampshire DOT
Department of Transportation



Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- PRIME FARMLANDS
- FARMLANDS OF STATEWIDE IMPORTANCE
- FARMLANDS OF LOCAL IMPORTANCE

N

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.5-1
Important Farmland Soils

Source: NRCS soil survey, Rockingham & Strafford counties. Farmland soils in urbanized areas of Dover and Newington (US Census Bureau) are not shown, as per Farmland Protection Policy Act.

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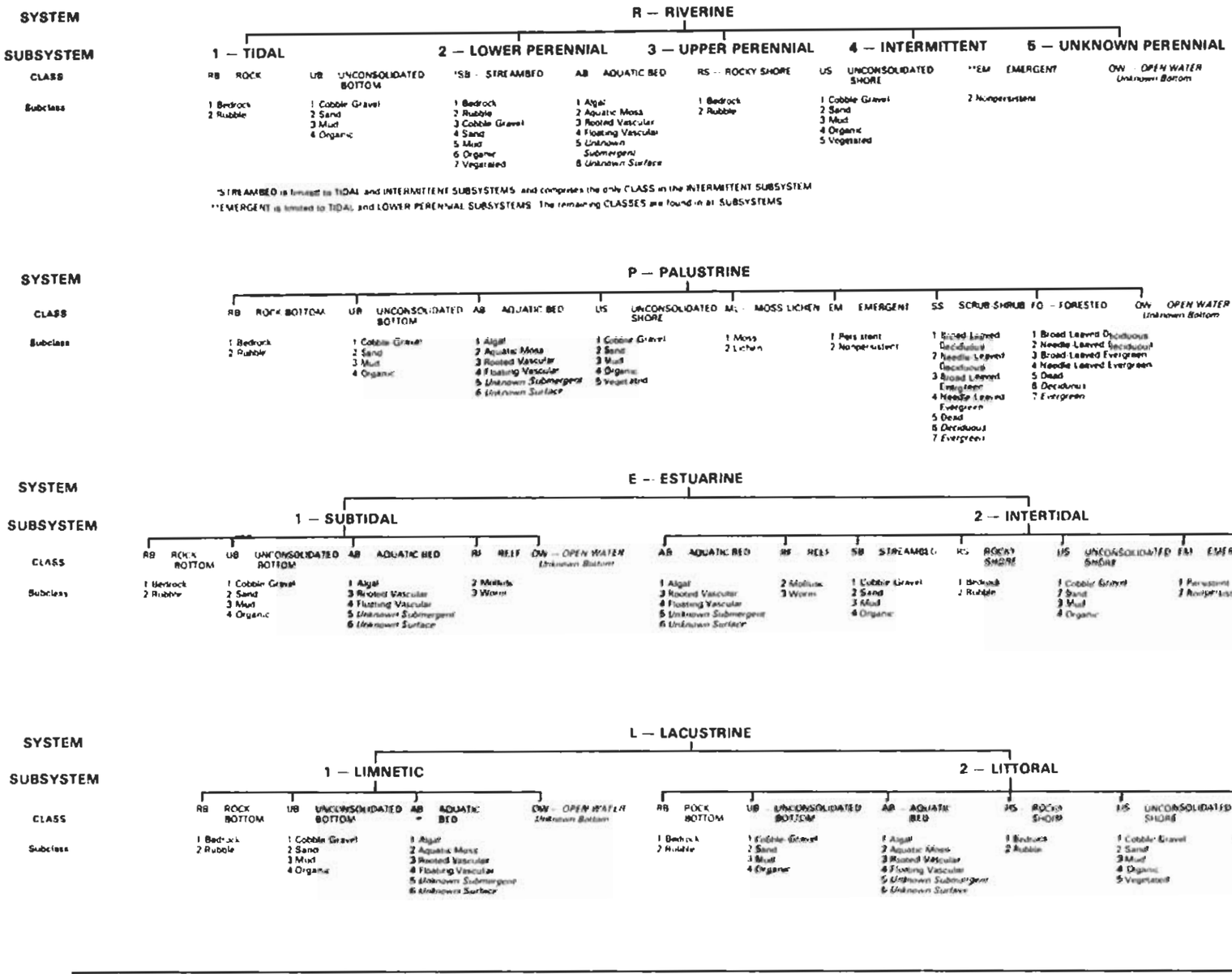


Source: USFWS, National Wetlands Inventory, after Cowardin, *et al* (1979).

Vanasse Hangen Brustlin, Inc.

Figure 3.6-1
Wetland Classification System
(Cowardin,*et al.* 1979)

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
DOVER
NEWINGTON
NEW HAMPSHIRE
MAINE
PISCATAQUA RIVER
PEASE BLVD
COCHING RD
ARBORETUM DR
RAILWAY BROOK
PEASE SEUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
FOX RUN RD
WOODBURY AVE
RIVER RD
SHATTUCK WAY
MERY DR
PAUL BROOK
PISCATAQUA DR
UNNAMED TRIBUTARY 1
PATTERSON LN
TRIBUTARY 2
UNNAMED PONDS
QUIFFORD BR NEWINGTON BRANCH
BLOODY POINT
DOVER POINT
HILTON DR
WENTWORTH TER
DOVER POINT RD
POMEROY COVE
COVE DR
HILTON RD
BOSTON HARBOR RD
SPRATT RD
ROYALS COVE
CLEARWATER DR
BELLAMY RIVER
TOLL PLAZA
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
16
4

Legend:

- TOWNLINE
- STATELINE

DOMINANT WETLAND COVER TYPE

- PALUSTRINE, FORESTED
- PALUSTRINE, SCRUB-SHRUB
- PALUSTRINE, EMERGENT
- PALUSTRINE, UNCONSOLIDATED BOTTOM
- ESTUARINE, INTERTIDAL
- ESTUARINE, SUBTIDAL
- POTENTIAL VERNAL POOLS
- RIVERINE, LOWER OR UPPER PERENNIAL

N

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-2
Terrestrial Wetland Resources

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030602.dgn

Wetland I.D.		Approximate Total Acres

ES

Indicates Principal Function or Value

Ground Water Recharge / Discharge

Floodflow Alteration (Storage & Desynchronization)

Fish & Shellfish Habitat

Sediment / Toxicant Retention

Nutrient Removal / Retention / Transformation

Production Export (Nutrient)

Sediment / Shoreline Stabilization

Wildlife Habitat

Recreation (Consumptive & Non-Consumptive)

Education Scientific Value

Uniqueness / Heritage

Visual Quality Aesthetics

ES Endangered Species

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems
Functions and Values
Sheet 1 of 8

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 2 of 8

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 3 of 8

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030603c.dgn

GOSLING RD

FOX RUN RD

ISAAC DOW HOUSE

N-19c

BEANE FARM

WOODBURY AVE

AVERY DR

SHATTUCK WAY

N-16

N-15b

N-15a

N-13

N-14

PISCATAQUA DR

UNNAMED TRIBUTARY 1

Wetland I.D. N-15b	Approximate Total Acres 0.43

Wetland I.D. N-16	Approximate Total Acres 1.03

Wetland I.D. N-15a	Approximate Total Acres 0.86

Wetland I.D. N-13	Approximate Total Acres 4.54

Wetland I.D. N-14	Approximate Total Acres 3.23

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 4 of 8

PICKERING BROOK

EXXON MOBIL

N-3b

N-19c

RIVER RD

N-17

N-16

SHATTUCK WAY

N-8a

N-21

N-22

N-23

BLOODY POINT

N-20a UNNAMED PONDS

See Sheet 6 for Detail

PATTERSON LN

UNNAMED TRIBUTARY 2

N-18

GUILFORD RR NEWINGTON BRANCH

Newington Segments

Bridge Segments

PISCATAQUA RIVER

NEW HAMPSHIRE

MAINE

Wetland I.D.		Approximate Total Acres
N-17		0.30

Wetland I.D.		Approximate Total Acres
N-18		8.97

Wetland I.D.		Approximate Total Acres
N-20a		17.33

Wetland I.D.		Approximate Total Acres
N-21		1.50

Wetland I.D.		Approximate Total Acres
N-22		1.52

Wetland I.D.		Approximate Total Acres
N-8a		2.93

Wetland I.D.		Approximate Total Acres
N-23		0.42

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- (#) Wetland System

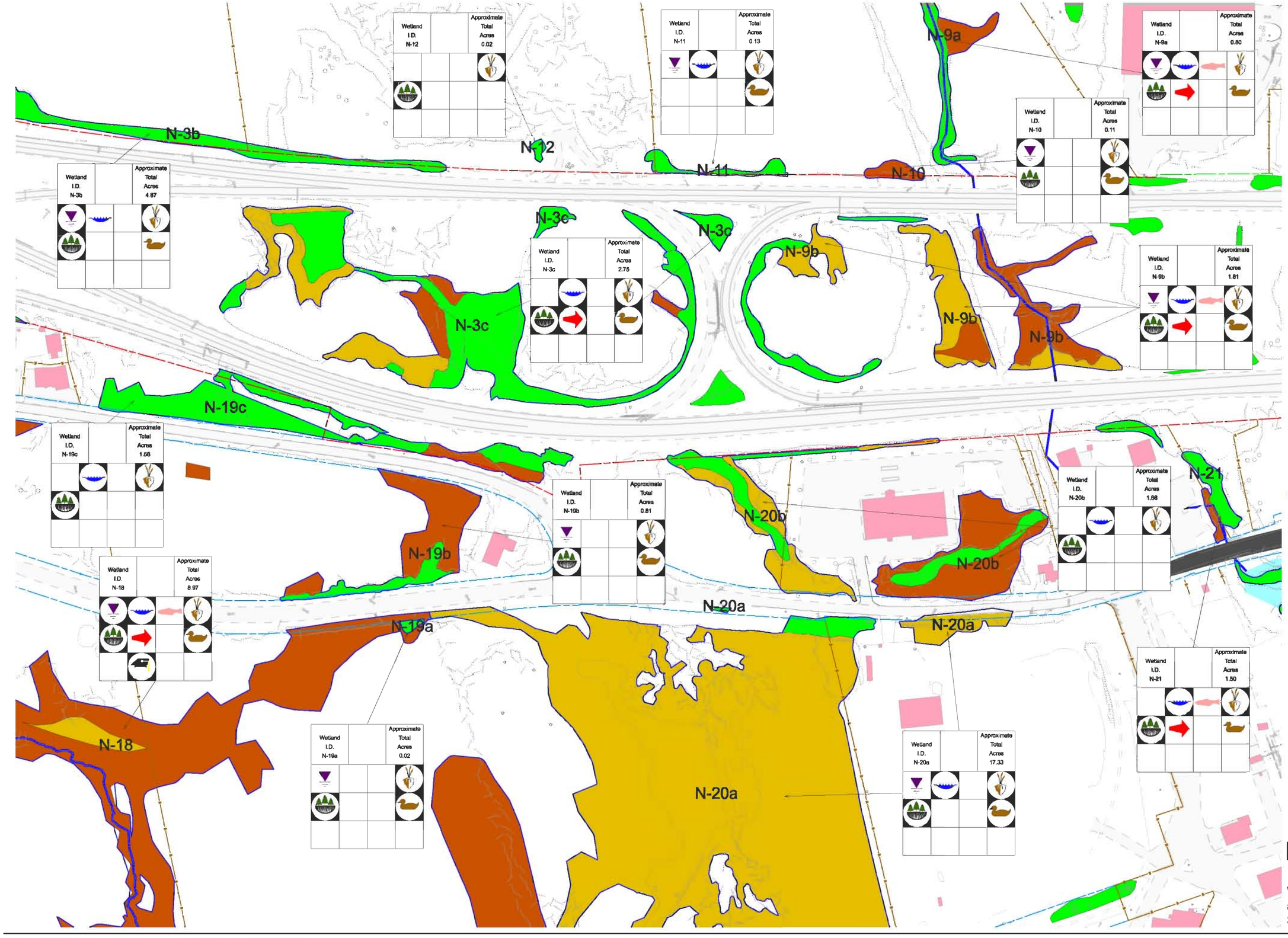
Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 5 of 8

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030603e.dgn



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:

Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 6 of 8

LITTLE BAY

ROCKINGHAM COUNTY

STRAFFORD COUNTY

TRICKY'S COVE

HILTON PARK

DOVER POINT RD

ADAPTATIONS

D-11

D-12

K9 KAOS

POMEROY COVE

GENERAL SULLIVAN BRIDGE

LITTLE BAY BRIDGES

D-1a

DOVER POINT

HILTON PARK

HILTON DR

WENTWORTH TER

D-1

N-23

N-22

BLOODY POINT

DOVER

NEWINGTON

Bridge Segments

Dover Segments

NEW HAMPSHIRE

MAINE

Wetland I.D.		Approximate Total Acres
D-12		0.73

Wetland I.D.		Approximate Total Acres
D-11		1.83

Wetland I.D.		Approximate Total Acres
N-23		0.42

Wetland I.D.		Approximate Total Acres
D-1a		0.07

Wetland I.D.		Approximate Total Acres
D-1		0.46

Wetland I.D.		Approximate Total Acres
N-22		1.52

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 7 of 8

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Property Lines
- Existing LAROW
- Existing CAROW
- Existing ROW
- PFO Wetland
- PSS Wetland
- PEM Wetland
- POW Wetland
- Estuarine Wetland
- Potential Vernal Pool
- Riverine Wetland
- # Wetland System

Note:
Unlabeled wetlands are isolated and/or not impacted by any alternative.

0 200 400 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.6-3
Wetland Systems Functions and Values
Sheet 8 of 8

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030603h.dgn

Wetland Number	Wetland Name	Watershed	Total Wetland Area (acres)	Cover Type(s)	Groundwater Recharge/ Discharge	Floodflow Alteration	Fish and Shellfish Habitat	Sediment/ Toxicant Retention	Nutrient Removal	Production Export	Sediment/ Shoreline Stabilization	Wildlife Habitat	Recreation	Educational/ Scientific Value	Uniqueness/ Heritage	Visual Quality/ Aesthetics
N-1	Newington 1	Coastal Drainage	9.1	PFO1E	✓	0		0	0	✓		0				
N-2	Newington 2	Great Bay	36.2	PSS1E & PFO1/4E & PEM/SS1E	✓	0		0	0	0		0	✓		0	
N-3a	Newington 3a	Coastal Drainage	0.0	PEM/SS1C	✓			0	0			0				
N-3b	Newington 3b	Coastal Drainage	4.9	PEM1E	0	✓		0	0			✓				
N-3c	Newington 3c	Coastal Drainage	2.8	PEM1E & PFO1E & PSS1E		0		0	0	0		0				
N-4a	Newington 4a	Great Bay	10.6	PFO1E & PEM1E & PSS1E	✓	0		0	0	0		0	✓			
N-4b	Newington 4b	Great Bay	4.4	PFO5H & PEM1E & R2UB3Hb	✓	0	✓	0	✓	✓	✓	0	0	✓	✓	✓
N-5	Newington 5	Great Bay	1.2	R2UB2/1Hbhx & PSS1E & PF01E	✓	0	✓	✓	✓	✓	0	0				
N-6	Newington 6	Great Bay	1.1	PSS1E & R3UB3H	✓	0	✓	✓	✓		0	✓				
N-7	Newington 7	Great Bay	1.3	PF01E & R3UB1Hh & E2EM & E2US3	0	0	0				0	✓				✓
N-8	Newington 8	Great Bay	0.5	PEM1C & E2EM1	0	✓		✓				✓			✓	✓
N-8a	Newington 8a	Coastal Drainage	2.9	PFO1C & PEM1E	0	0		0				0				
N-9a	Newington 9a	Coastal Drainage	0.8	R2UB3Hb & PFO1E & PEM1E	0	0	✓	✓	✓	✓		✓				
N-9b	Newington 9b	Coastal Drainage	1.8	R2UB3Hb & PFO1E & PEM1E	✓	0	✓	0	0	✓		0				
N-10	Newington 10	Coastal Drainage	0.1	PFO1C	0			0	✓			0				
N-11	Newington 11	Coastal Drainage	0.1	PFO/EM1E	✓	0		0				0				
N-12	Newington 12	Coastal Drainage	0.0	PEM1E				0	0							
N-13	Newington 13	Coastal Drainage	4.5	PEM1E & PSS1E & PFO1E & R2UB1H	✓	0		0	0			0				
N-14	Newington 14	Coastal Drainage	3.2	PEM1C & PFO1C	✓	0		0	0							
N-15a	Newington 15a	Coastal Drainage	0.9	PEM1C	✓	✓		0								
N-15b	Newington 15b	Coastal Drainage	0.4	PFO1E	0	0		✓	✓							
N-16	Newington 16	Coastal Drainage	1.0	PEM1E	✓	0		0	0							
N-17	Newington 17	Coastal Drainage	0.3	PFO1C	0							0				
N-18	Newington 18	Coastal Drainage	9.0	PFO1E & PEM1E	0	0	0	0	0	✓	✓	0		0		
N-19a	Newington 19a	Coastal Drainage	0.0	PFO1C	✓			0	0			0				
N-19b	Newington 19b	Coastal Drainage	0.8	PEM1E	✓			0	0			0				
N-19c	Newington 19c	Coastal Drainage	1.6	PEM1E		0		0	0							
N-20a	Newington 20a	Coastal Drainage	17.3	PSS/EM1E	✓	0		0	0			0				
N-20b	Newington 20b	Coastal Drainage	1.9	PSS/EM1E & PFO1E		0		0	0							
N-21	Newington 21	Coastal Drainage	1.5	PEM1E & R2UB3Hb		0	✓	0	0	✓		✓				
N-22	Newington 22	Coastal Drainage	1.5	PEM1E & PF01E		0		0	0	✓		✓				
N-23	Newington 23	Coastal Drainage	0.4	PFO1C	0	0		0	✓							

Figure 3.6-4
Summary of Wetland Resources (Sheet 1 of 2)

Wetland Number	Wetland Name	Watershed	Total Wetland Area (acres)	Cover Type(s)	Groundwater Recharge/ Discharge	Floodflow Alteration	Fish and Shellfish Habitat	Sediment/ Toxicant Retention	Nutrient Removal	Production Export	Sediment/ Shoreline Stabilization	Wildlife Habitat	Recreation	Educational/ Scientific Value	Uniqueness/ Heritage	Visual Quality/ Aesthetics
D-1	Dover 1	Coastal Drainage	0.5	PEM1E & PFO1E	**0**	**0**		**0**	**0**							
D-1a	Dover 1a	Coastal Drainage	0.1	PEM1A				**0**	✓							
D-2	Dover 2	Coastal Drainage	2.6	PFO1E & PSS1E & PEM1E	**0**	**0**		**0**	**0**			**0**		✓		
D-3	Dover 3	Coastal Drainage	0.1	PEM1E	✓	**0**		**0**	**0**			✓				
D-4	Dover 4	Bellamy River	0.2	PFO1E & PEM1E	✓	✓		**0**	**0**			✓				
D-5	Dover 5	Coastal Drainage	0.5	PFO1B	**0**							**0**				
D-6	Dover 6	Bellamy River	0.1	PEM1E	✓	**0**		**0**	✓			✓				
D-7	Dover 7	Bellamy River	0.2	PFO1B	**0**			✓	✓			**0**				
D-7a	Dover 7a	Bellamy River	14.3	PFO1/4E	**0**	✓		**0**	**0**			**0**	**0**	✓		
D-8	Dover 8	Bellamy River	0.8	PFO1/4E	**0**	**0**		✓	✓			**0**				
D-9	Dover 9	Coastal Drainage	1.4	PFO1E & PEM1E	✓	**0**		**0**	**0**			✓				
D-10	Dover 10	Coastal Drainage	9.0	PFO1E/ & PEM1E	**0**	**0**		**0**	**0**			**0**				
D-11	Dover 11	Coastal Drainage	1.8	PEM1E		**0**		**0**	**0**	✓						
D-12	Dover 12	Coastal Drainage	0.7	PEM1E & PFO1E		**0**		**0**	**0**							

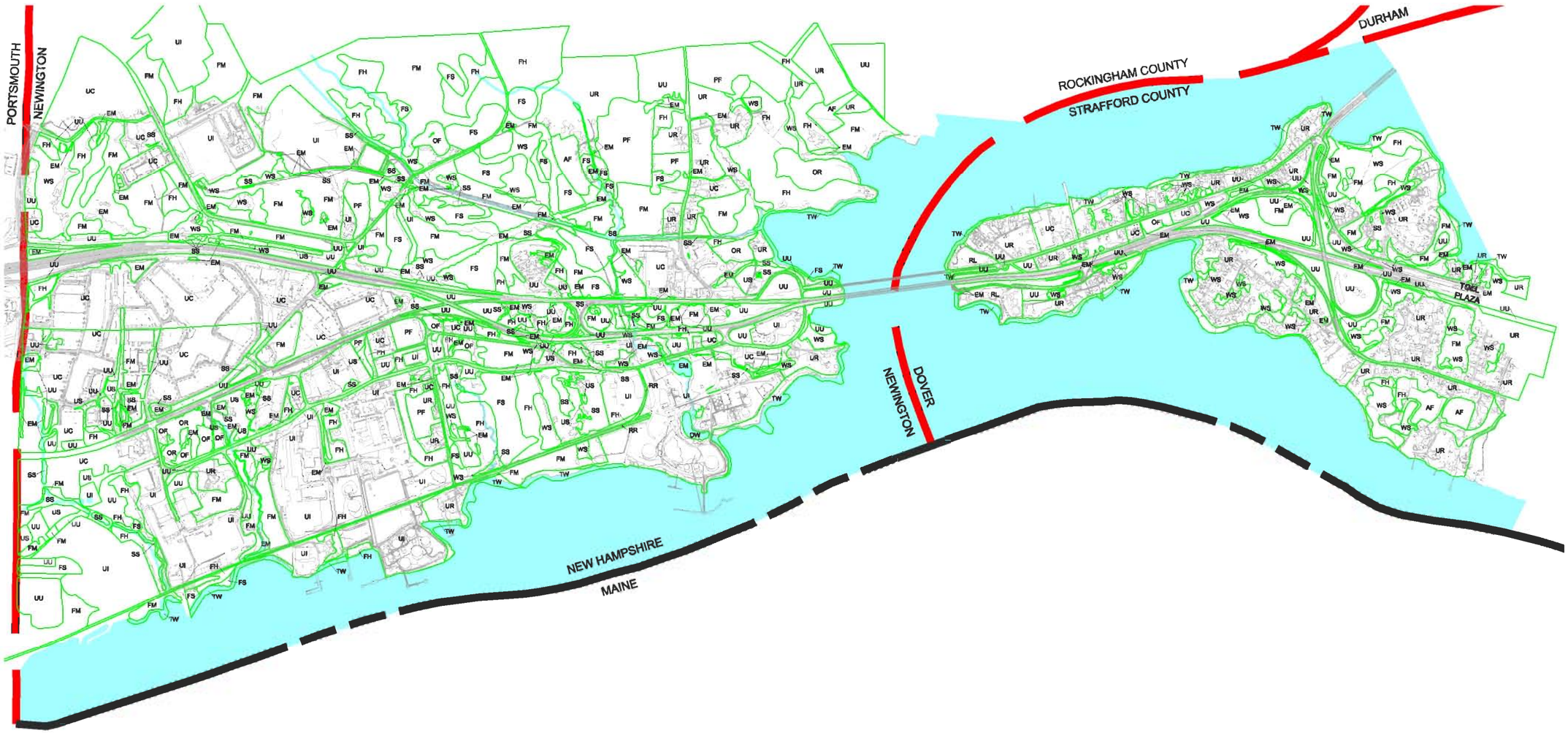
✓ = Function Present

0 = Principal Function

Note: No known populations of wetland-dependent threatened or endangered species are present in the study area wetlands that are subject to impact from the proposed alternatives.

Figure 3.6-4
Summary of Wetland Resources (Sheet 2 of 2)

New Hampshire DOT
Department of Transportation



Legend:

	SURFACE WATERS
	TOWNLINE
	STATELINE
TW	Tidal Wetland
UI	Urban Industrial
UC	Urban Commercial
OW	Open Water
UU	Urban Undeveloped
US	Upland Shrub
FM	Forested Mixed
FH	Forested Hardwood
FS	Forested Softwood
RR	Railroad
UR	Urban Residential
PF	Pasture, Field
OR	Orchard
AF	Agriculture Field
OF	Old Field
RL	Recreational Land
WS	Wooded Swamp
SS	Scrub-Shrub Swamp
EM	Emergent Marsh

N

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.7-1
Wildlife Habitat Cover Types

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030701.dgn

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- POPULATION OF PROTECTED SPECIES
- EXEMPLARY NATURAL COMMUNITY (NHNHB)

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
DOVER
NEW HAMPSHIRE
MAINE
LITTLE BAY
PISCATAQUA RIVER
GUILFORD RR NEWINGTON BRANCH
SNE ACIDIC SEEPAGE SWAMP
SNE CALCAREOUS SEEPAGE SWAMP
BULBOUS BITTER-CRESS
HENSLOW'S SPARROW (EXTIRPATED)
PROLIFIC KNOTWEED *
SMALL SPIKE-RUSH
PEASE BLVD
GOSLING RD
FOX RUN RD
WOODBURY AVE
AVERY DR
PISCATAQUA DR
PAUL BROOK
UNNAMED TRIBUTARY 1
ARBORETUM DR
RAILWAY BROOK
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
RIVER RD
SHATTUCK WAY
BLOODY POINT
UNNAMED PONDS
UNNAMED TRIBUTARY 2
PATTERSON LN
DOVER POINT
HILTON DR
WENTWORTH TER
DOVER POINT RD
POMEROY COVE
COTE DR
HILTON RD
BOSTON HARBOR RD
SPUR RD
ROYALS COVE
CLEARWATER DR
BELLAMY RIVER
TOLL PLAZA
HOMESTEAD LN
PREVIEW LN
PEARSON LN
16
4

* Prolific knotweed population known only from an historic record.

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.8-1
Threatened and Endangered Species

Date Created7/12/2008 j:\51425\cad\te\phase3\DEIS\fig030801.dgn

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- WATERSHED BOUNDARY

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
GREAT BAY WATERSHED
BELLAMY RIVER WATERSHED
COASTAL DRAINAGE WATERSHED
PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
DOVER POINT RD
BOSTON HARBOR RD
SPUR RD
ROYALS COVE
CLEARWATER DR
BELLAMY RIVER
POMEROY COVE
COTE DR
DOVER POINT RD
HILTON DR
DOVER POINT
HILTON DR
WENTWORTH TER
TOLL PLAZA
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
DOVER POINT RD
FOX RUN RD
RIVER RD
WOODBURY AVE
AVERY DR
SHATTUCK WAY
SHATTUCK WAY
UNNAMED PONDS
BLOODY POINT
PATTERSON LN
UNNAMED TRIBUTARY 2
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
DOVER
NEWINGTON
PISCATAQUA RIVER
PISCATAQUA DR
PAUL BROOK
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

Note: The watershed boundaries shown here are taken from the USGS HUC 12-digit code (from GRANIT). The break between the Great Bay watershed and the Coastal Drainage was modified based on field observations of the Railway / Flagstone / Pickering Brook system with the USGS boundary shown as a dashed line and the modified boundary shown as a solid line.

N

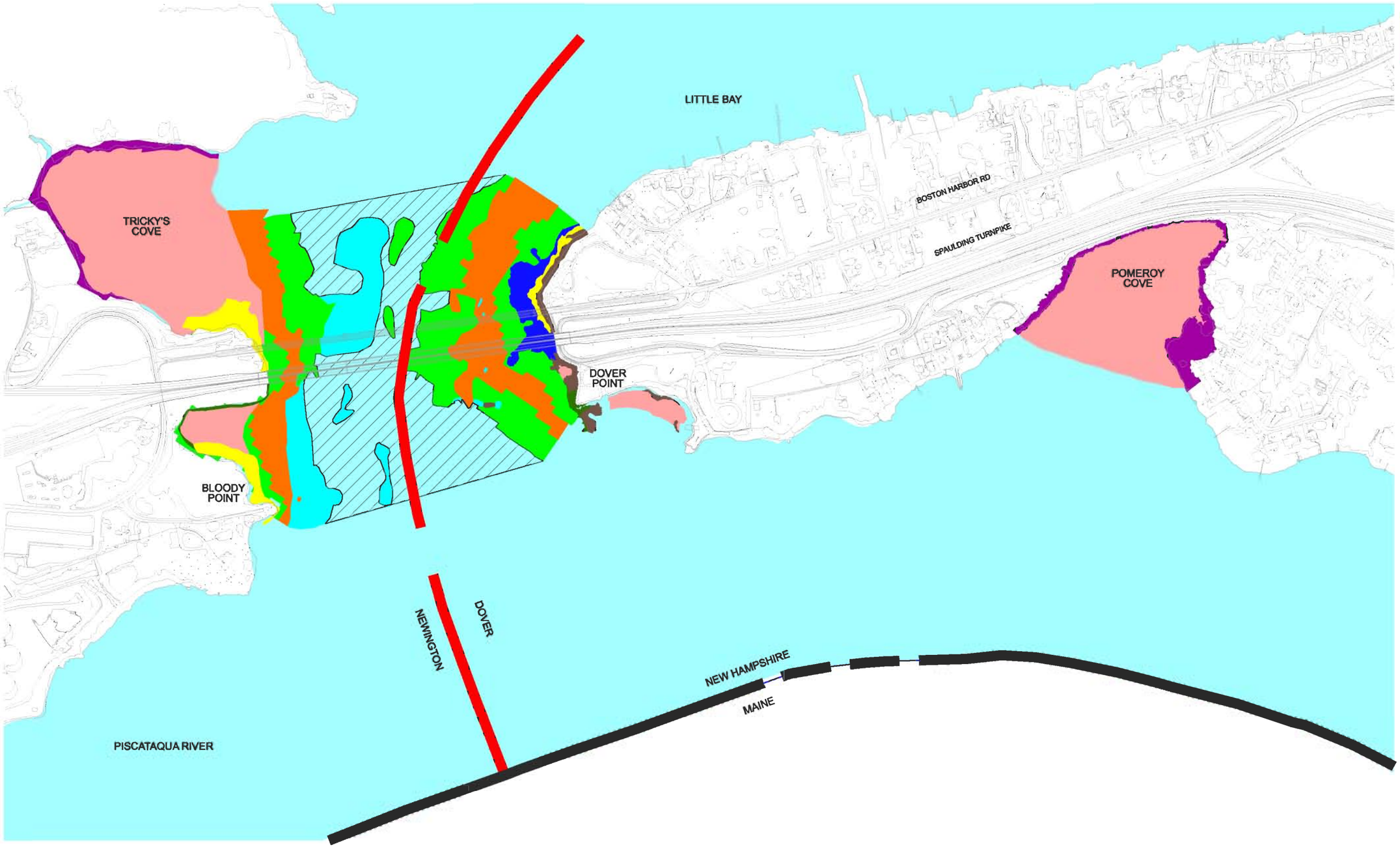
0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.9-1
Watersheds and Surface Water Resources

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig030901.dgn

New Hampshire DOT
Department of Transportation



Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE

INTERTIDAL HABITATS

- HARD BOTTOM WITH ROCKWEED
- MUDFLAT
- ROCK / ALGAL / ABUNDANT MUSSEL
- ROCK / ALGAL / SPARSE MUSSEL
- SALT MARSH
- SCATTERED ROCK / ALGAL / SOFT SEDIMENT

SUBTIDAL HABITATS

- KELP BED
- MACROALGAL (NON-KELP) BED
- MUSSEL REEF
- OTHER

N

0 250 500 Feet

Vanasse Hangen Brustlin, Inc.

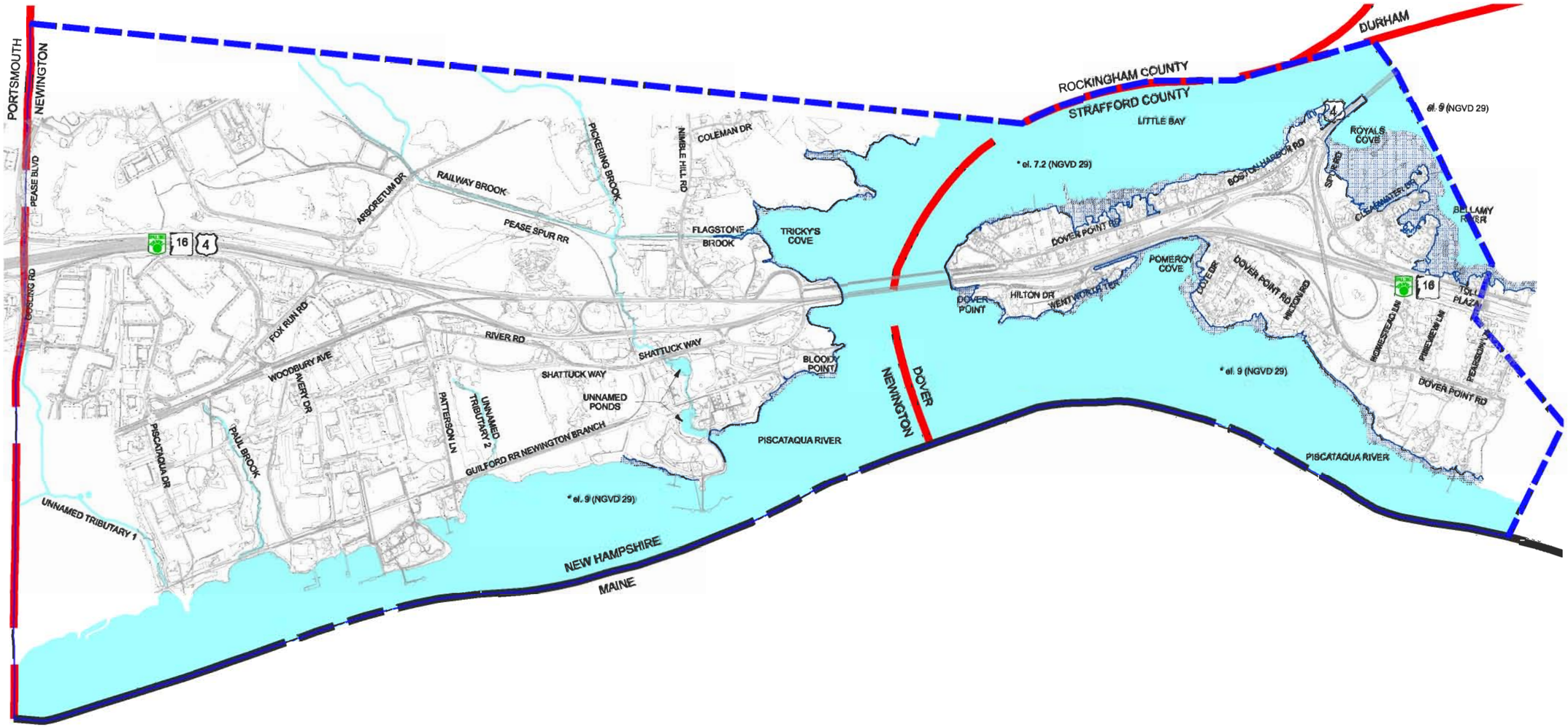
Figure 3.10-1
Intertidal and Subtidal Habitats

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031001.dgn

New Hampshire DOT
Department of Transportation

Legend:

- STREAM
- OPEN WATER
- 100-YEAR FLOODPLAIN



0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.11-1
Study Area Floodplain Map

* 100-Year Flood Elevation

Source: FEMA Flood Insurance Study
Rockingham County Study #33015CZ001A (May 3, 2005)
Strafford County Study #33017CZ000A (May 17, 2005)

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
DOVER
NEW HAMPSHIRE
MAINE
PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
LITTLE BAY
ROYALS COVE
BOSTON HARBOR RD
SPUR RD
CLEARWATER DR
BELLAMY RIVER
DOVER POINT RD
POMEROY COVE
DOVER POINT
HILTON DR
WENTWORTH TER
TOLL PLAZA
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
FOX RUN RD
RIVER RD
WOODBURY AVE
AVERY DR
SHATTUCK WAY
UNNAMED PONDS
BLOODY POINT
PISCATAQUA DR
PAUL BROOK
PATTERSON LN
UNNAMED TRIBUTARY 2
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
UNNAMED TRIBUTARY 1

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- WELLHEAD PROTECTION AREA (NHDES PHASE 1)
- PRIVATE WELLS WITH 75' WELL PROTECTION ZONE

USERS OF 20,000+ (GAL./DAY)

- (S) SURFACE WATER
- (G) GROUNDWATER
- (T) TRANSFERRED WATER BETWEEN TWO FACILITIES

TRANSMISSIVITY VALUES (SQ. FT/DAY)

- 4000 - 8000
- 2000 - 4000
- 1000 - 2000
- 1 - 1000

N

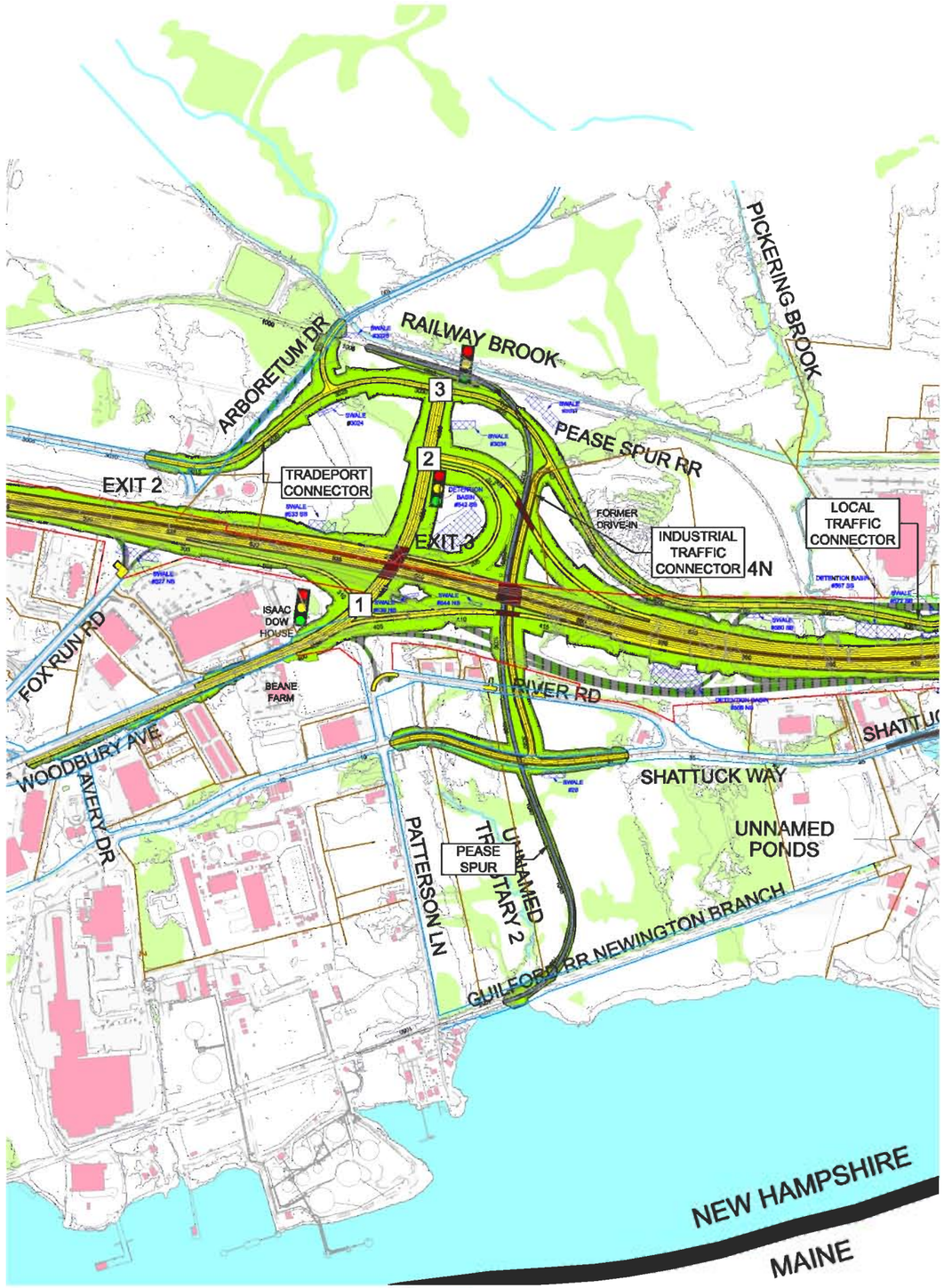
0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.12-1
Groundwater Resources

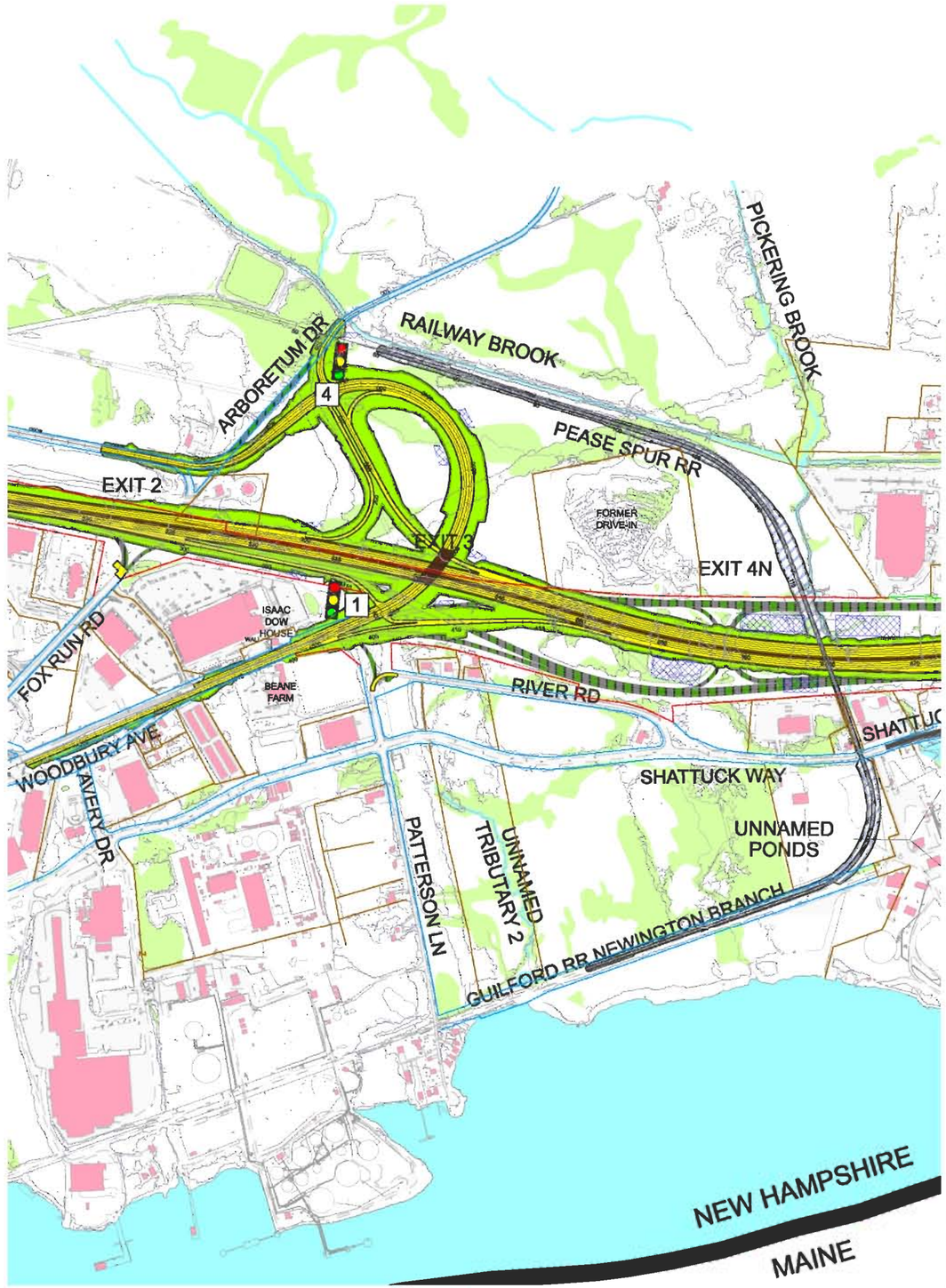
Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031201.dgn

NEWINGTON ALTERNATIVE 12A*



* Newington Alternative 10A and 12A have Similar Signalized Intersection Configurations.

NEWINGTON ALTERNATIVE 13



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- # Microscale Study Area Intersection Location

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.13-1
Microscale Study Area Intersections, Newington Alternatives

DOVER ALTERNATIVE 3 *

DURHAM

ROCKINGHAM COUNTY

STRAFFORD COUNTY

DOVER

NEWINGTON

NEW HAMPSHIRE

MAINE

3

2

1

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- # Microscale Study Area Intersection Location

0 400 800 Feet

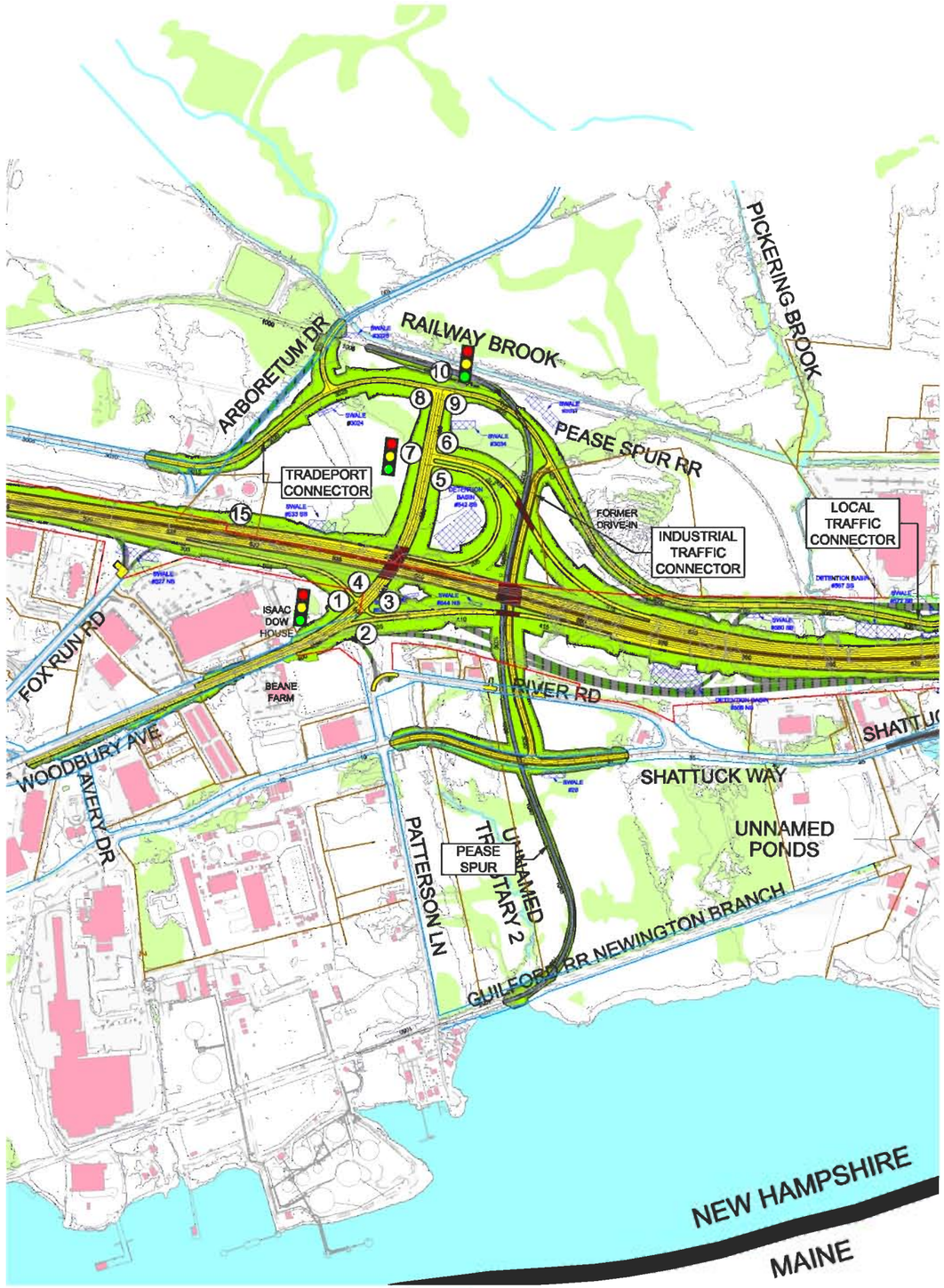
Vanasse Hangen Brustlin, Inc.

Figure 3.13-2
Microscale Study Area Intersections,
Dover Alternatives

* Dover Alternative 2 and 3 have Similar Intersection Configurations.

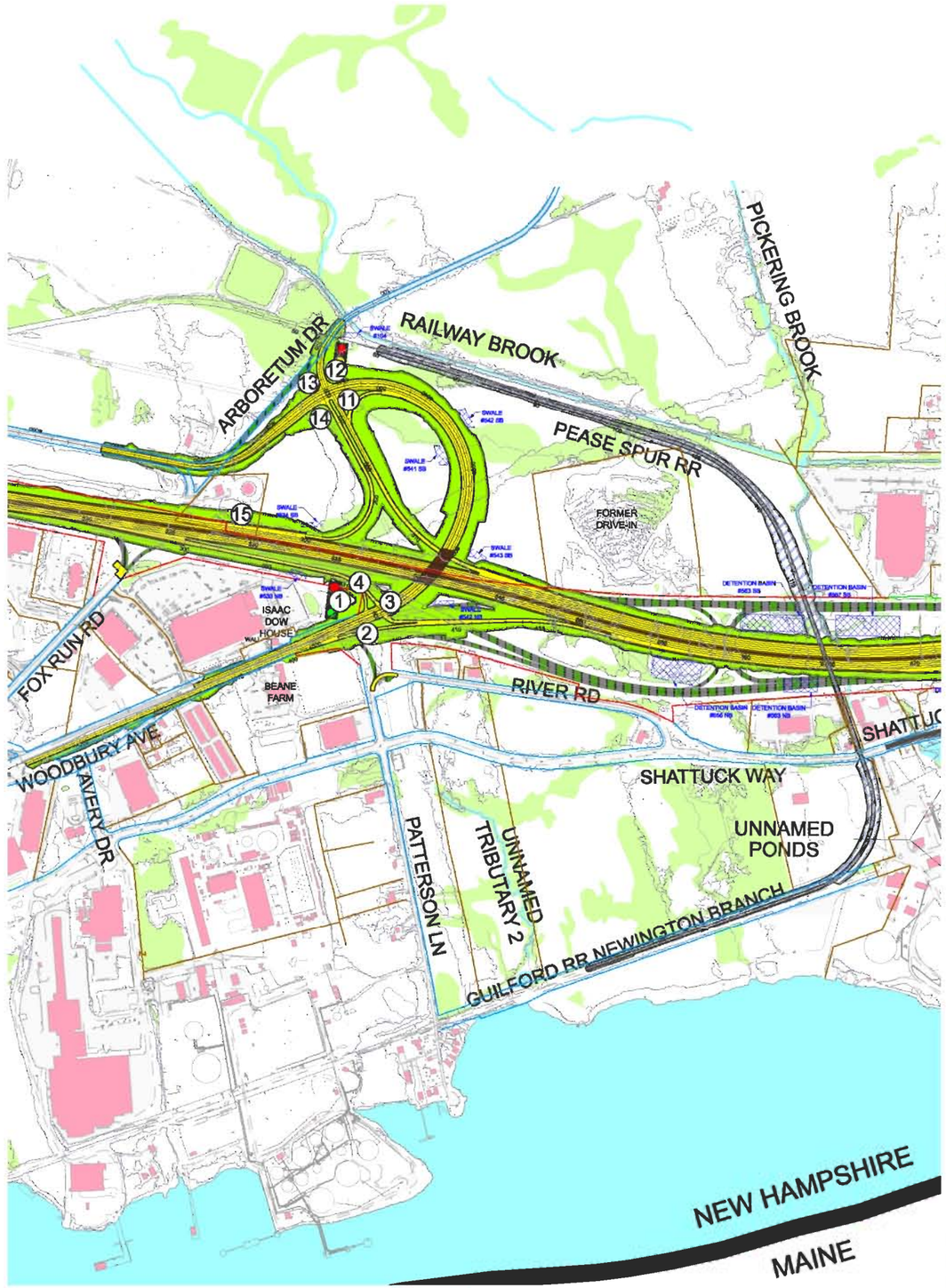
Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031302.dgn

NEWINGTON ALTERNATIVE 12A *



* Newington Alternative 10A and 12A have Similar Signalized Intersection Configurations.

NEWINGTON ALTERNATIVE 13



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- (#) Microscale Receptor Location

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.13-3
Microscale Receptor Locations
Newington Alternatives

DOVER ALTERNATIVE 3 *

DURHAM

ROCKINGHAM COUNTY

STRAFFORD COUNTY

DOVER

NEWINGTON

NEW HAMPSHIRE

MAINE

New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- (#) Microscale Receptor Location

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.13-4
Microscale Receptor Locations
Dover Alternatives

* Dover Alternatives 2 and 3 have Similar Intersection Configurations.

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031304.dgn

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- EXISTING NOISE MONITORING LOCATION
- NOISE EVALUATION AREA

PORTSMOUTH
NEWINGTON
DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
PEASE BLVD
GOSLING RD
ARBORETUM DR
RAILWAY BROOK
PEASE SPUR RR
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
AREA 11
AREA 12
AREA 13
AREA 14
FOX RUN RD
WOODBURY AVE
RIVER RD
SHATTUCK WAY
BLOODY POINT
UNNAMED PONDS
PATTERSON LN
UNNAMED TRIBUTARY 2
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
PAUL BROOK
PISCATAQUA DR
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE
DOVER
NEWINGTON
DOVER POINT RD
HILTON DR
WENTWORTH TER
POMEROY COVE
COTE DR
BOSTON HARBOR RD
SPUR RD
ROYALS COVE
CLEARWATER DR
BELLAMY RIVER
TOLL PLAZA
HOMESTEAD DR
NEWVIEW LN
PEARSON LN

Note: Areas 13 and 14 extend approximately 2,600 and 2,500 feet north of the limits of the study area, respectively.
These areas incorporate neighborhoods near and north of the Dover Tolls that may be impacted by noise from the Turnpike.

N

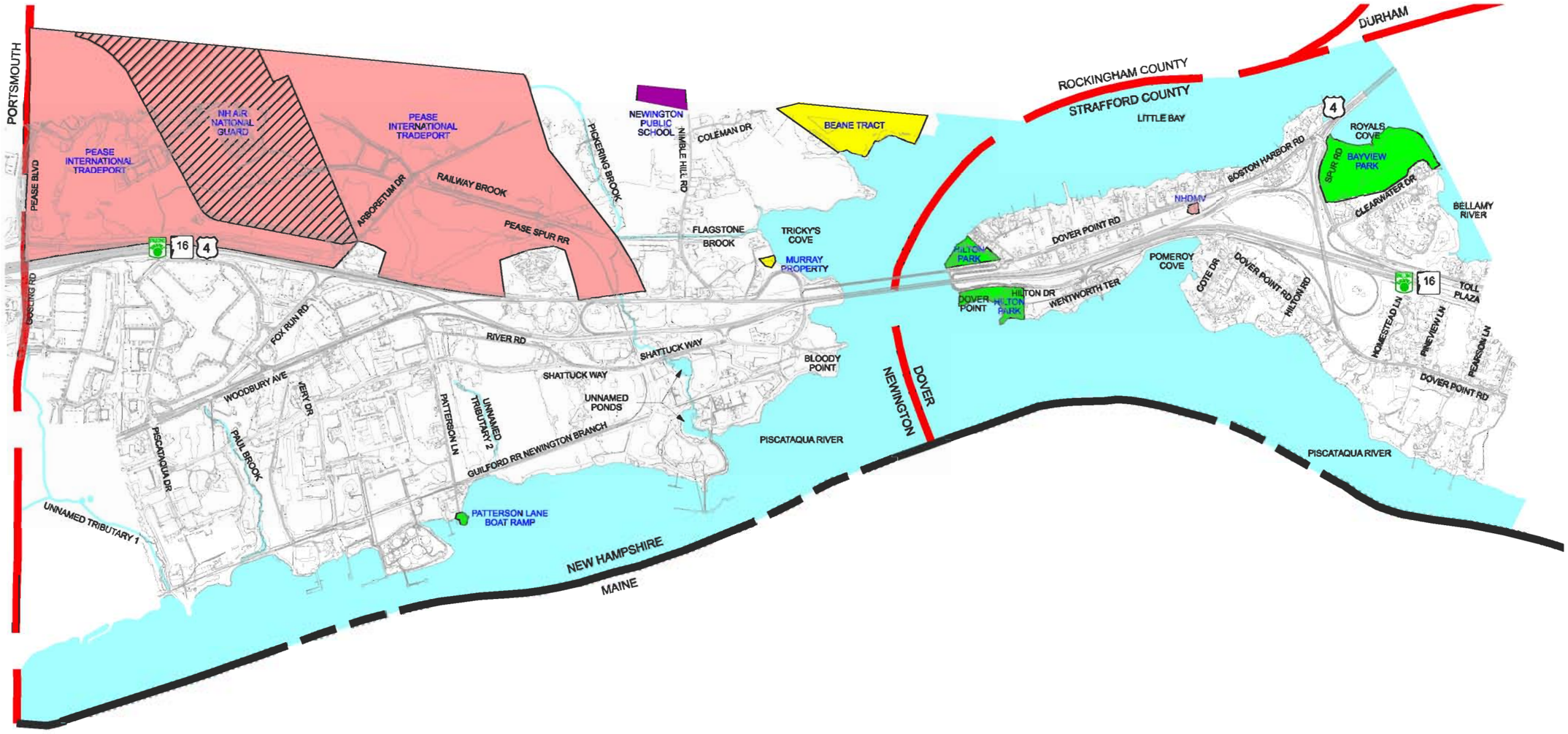
0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.14-1
Noise Sensitive Receptor Locations

Date Created7/12/2008 j:\51425\cad\te\phase3\DEIS\fig031401.dgn

New Hampshire DOT
Department of Transportation



Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- PEASE INTL. TRADEPORT
- NH AIR NATIONAL GUARD
- PARKS AND RECREATION
- SCHOOL
- CONSERVATION LAND

N

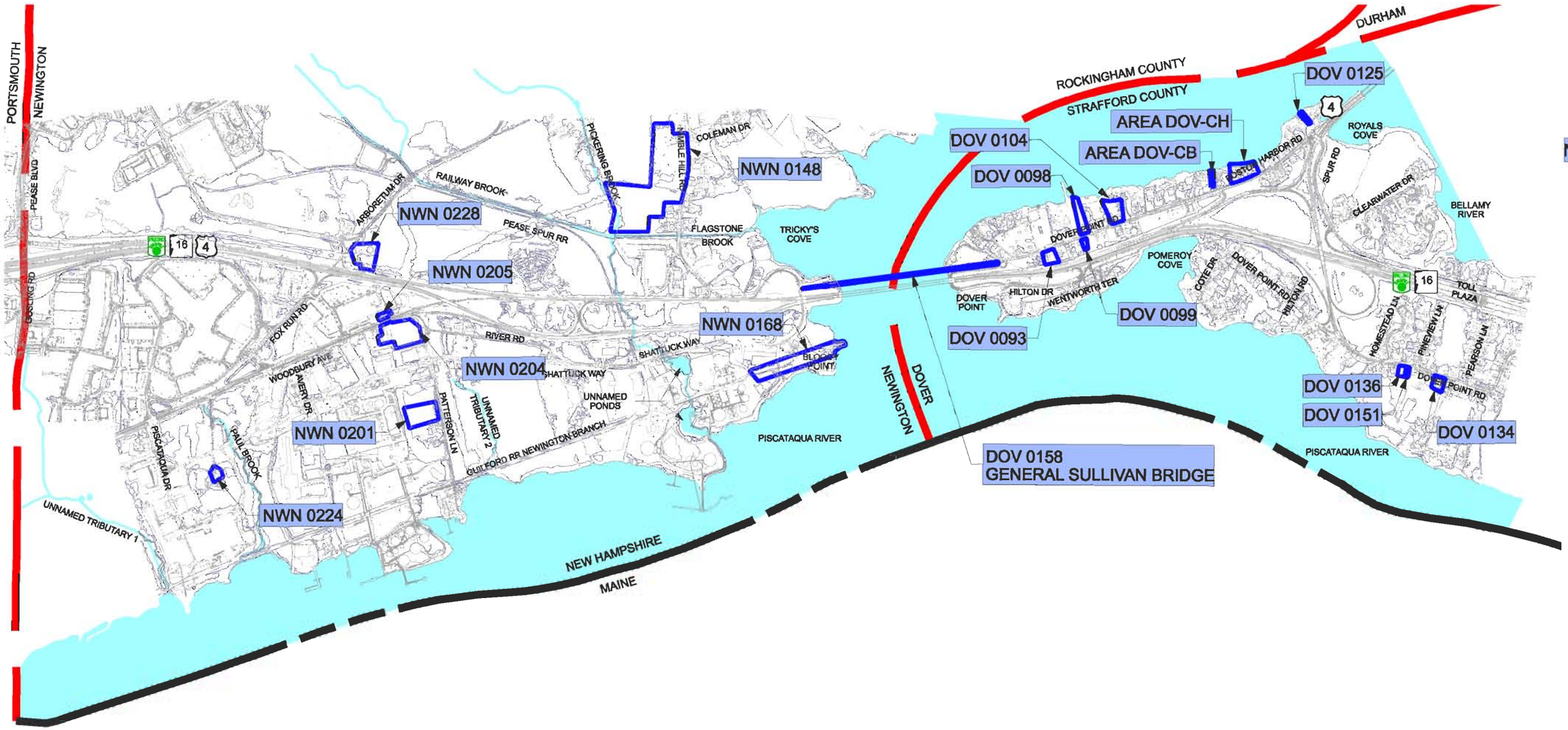
0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.15-1
Community Resources

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031501.dgn

New Hampshire DOT
Department of Transportation



Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- NWN/DOV — HISTORIC STRUCTURE (LISTED OR ELIGIBLE FOR LISTING)
- BOUNDARY OF LISTED OR ELIGIBLE PROPERTY

N

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.17-1
Historical Structures

Note: The DeRochemont property (NWN 0224) was determined eligible for listing as part of an earlier project.

New Hampshire DOT
Department of Transportation

DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
SCAMMELL BRIDGE
ROYALS COVE
BAYVIEW PARK
BOSTON HARBOR RD
SPUR RD
CLEARWATER DR
BELLAMY RIVER
TRICKY'S COVE
HILTON PARK
DOVER POINT RD
POMEROY COVE
COTE DR
GENERAL SULLIVAN BRIDGE
LITTLE BAY BRIDGES
DOVER POINT
HILTON DR
WENTWORTH TER
TOLL PLAZA
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
DOVER POINT RD
BLOODY POINT
SHATTUCK WAY (FORMERLY RIVER RD)
NEWINGTON
DOVER
NEW HAMPSHIRE
MAINE
PISCATAQUA RIVER

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- VERIFIED SITES AND CEMETERIES
- VERIFIED SITE, NOT ELIGIBLE
- AREA EXHIBITS SENSITIVITY FOR OCCURRENCE OF ARCHAEOLOGICAL RESOURCES
- AREA EXHIBITS PROBABLE SENSITIVITY FOR OCCURRENCE OF ARCHAEOLOGICAL RESOURCES BENEATH VENEER OF VISIBLE DISTURBANCE
- AREA LACKS INTEGRITY AND DOES NOT EXHIBIT SENSITIVITY FOR ARCHAEOLOGICAL RESOURCES
- HISTORIC ROADS AND RAILROAD

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.17-2
Areas of Archaeological Sensitivity
Dover

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- VERIFIED SITES AND CEMETERIES
- VERIFIED SITE, NOT ELIGIBLE
- AREA EXHIBITS SENSITIVITY FOR OCCURRENCE OF ARCHAEOLOGICAL RESOURCES
- AREA EXHIBITS PROBABLE SENSITIVITY FOR OCCURRENCE OF ARCHAEOLOGICAL RESOURCES BENEATH VENEER OF VISIBLE DISTURBANCE
- AREA LACKS INTEGRITY AND DOES NOT EXHIBIT SENSITIVITY FOR ARCHAEOLOGICAL RESOURCES
- HISTORIC ROADS AND RAILROAD

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.17-3
Areas of Archaeological Sensitivity
Newington

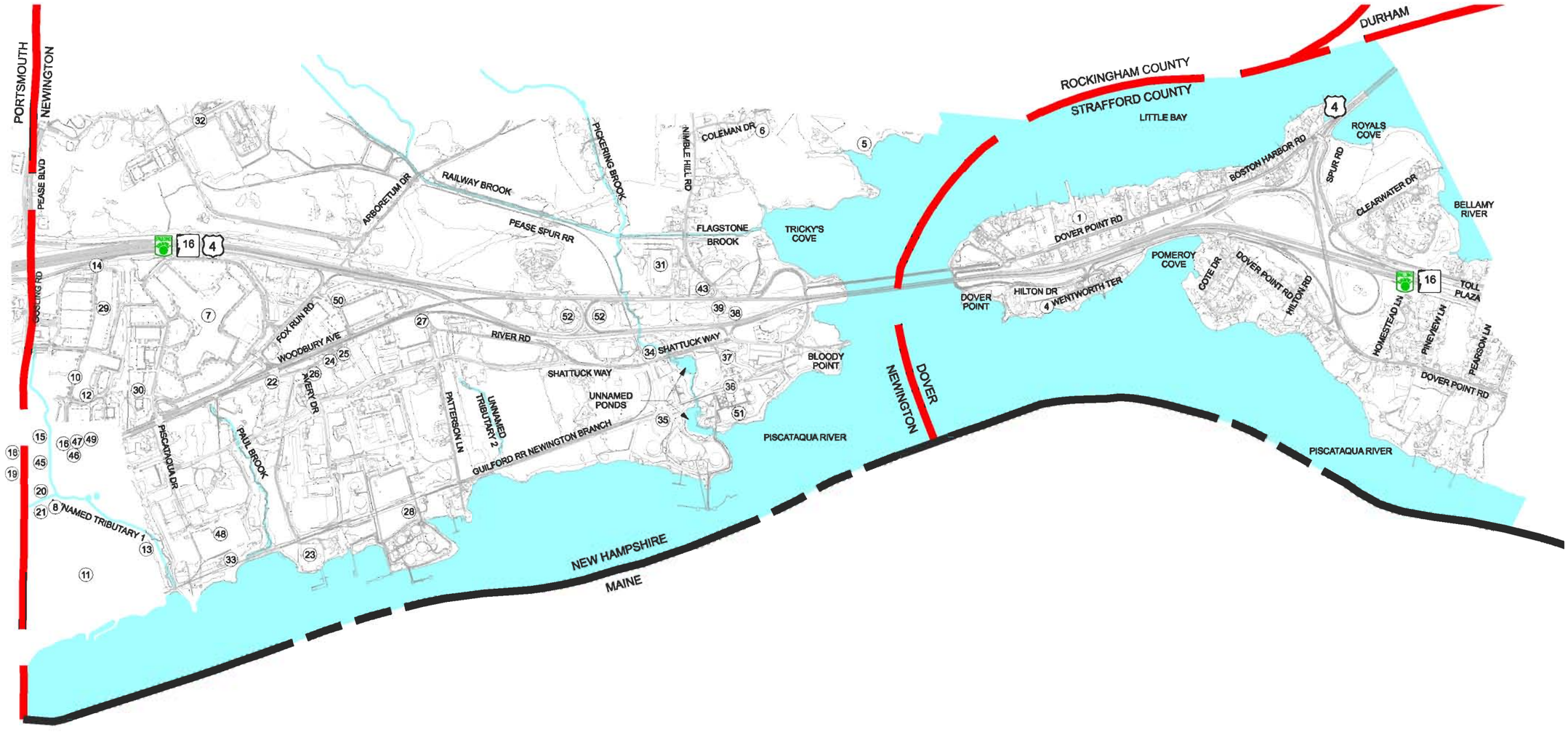
Date Created: 7/13/2006

j:\51425\cad\te\phase3\DEIS\fig031703.dgn

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- (#) CONFIRMED OR POTENTIAL CONTAMINATED SITES



Note: Refer to Table 3.18-1 of the EIS for site data
Sites 2, 3, 9, 13A, 17, 21A, 40, 41, 42 and 44 are not mapped.

0 750 1500 Feet

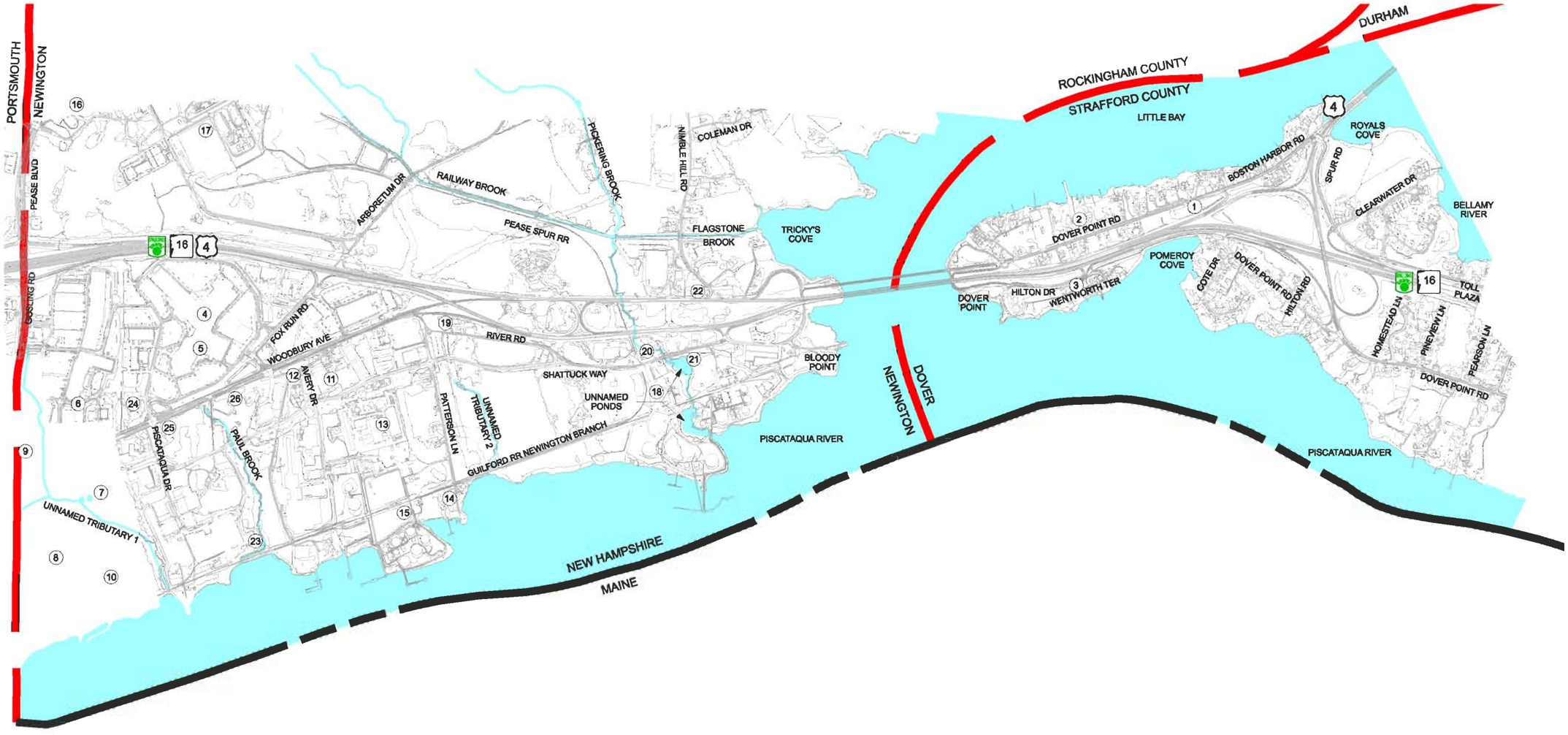
Vanasse Hangen Brustlin, Inc.

Figure 3.18-1
Confirmed and Potential
Contaminated Sites

New Hampshire DOT
Department of Transportation

Legend:

- SURFACE WATERS
- TOWNLINE
- STATELINE
- (#) REGISTERED AST/UST SITES



Note: Refer to Table 3.18-2 of the EIS for site data

0 750 1500 Feet

Vanasse Hangen Brustlin, Inc.

Figure 3.18-2
Registered AST/UST Sites

Date Created7/12/2006 j:\51425\cad\te\phase3\DEIS\fig031802.dgn

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
ARBORETUM DR
PEASE SPUR RR
NIMBLE HILL RD
COLEMAN DR
SPAULDING TURNPIKE
EXIT 2
EXIT 3
EXIT 4
FOX RUN RD
SHATTUCK WAY
WOODBURY AVE
PATTERSON LN
GUILFORD RR NEWINGTON BRANCH
16
4

1005 0 215 / 80 445 / 210 750
1220 2030 1620 260 1880 3250 210 1710 985 4235 4805 2090 180 380 2090 365 40
0 230 0 / 5 0 10 / 0 30 0 / 5 0 5
185 540 165 370 130 700
5 900 25 / 15 0 5 / 50 395 165 / 60 0 20
465 195 565 0 300 / 395 65
220 810 50 / 20 30 20 / 65 360 55 / 10 10 60
60 1020 0 / 245 0 45 / 250 480 0 / 55 25 0
130 50 / 5 35 / 55 315

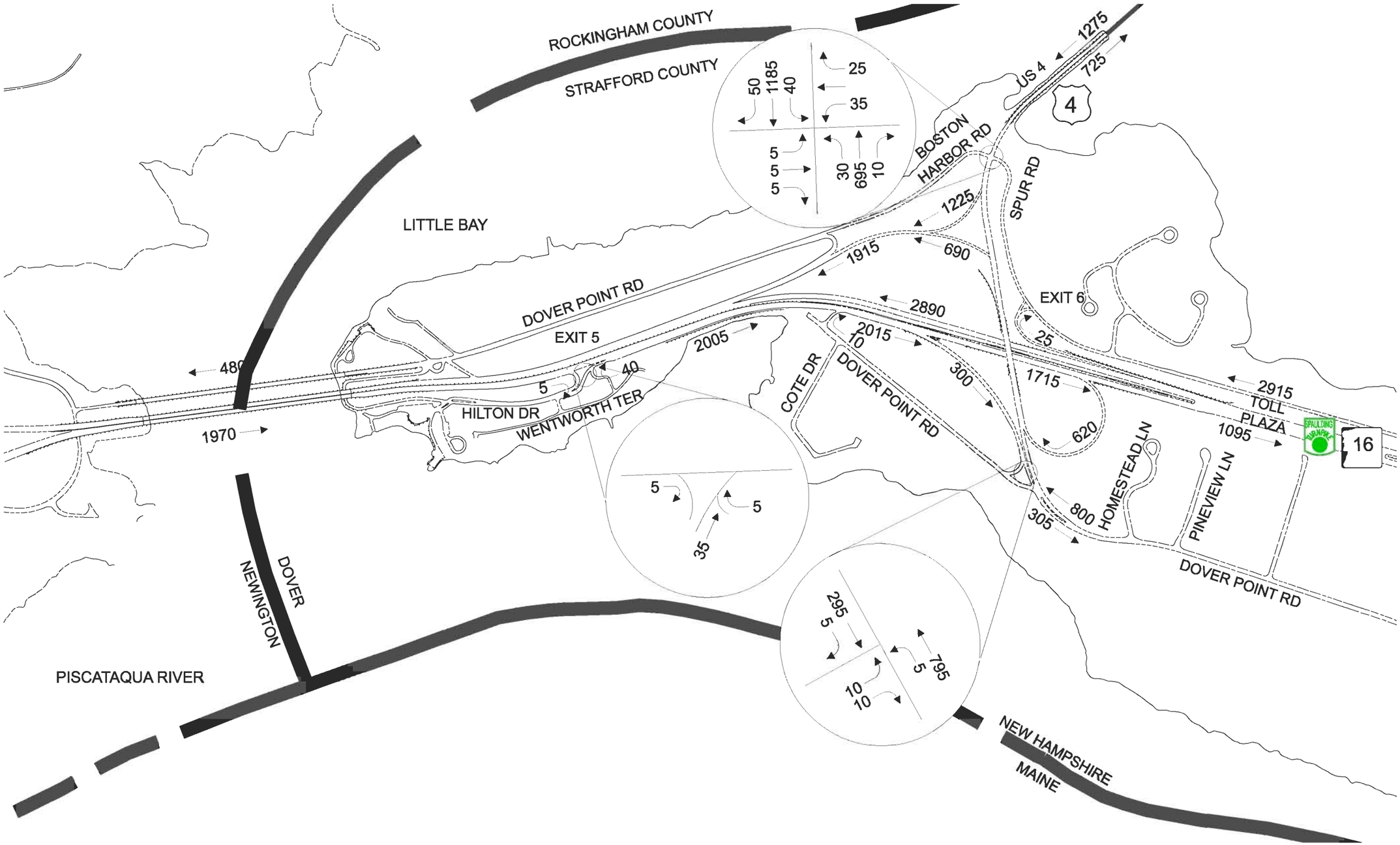
0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.2-1 - Newington
2025 No Build
Weekday AM Peak Hour Volumes
Sheet 1 of 2

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig040201a.dgn

New Hampshire DOT
Department of Transportation



Vanasse Hangen Brustlin, Inc.

Figure 4.2-1 - Dover
2025 No Build
Weekday AM Peak Hour Volumes
Sheet 2 of 2

New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
EXIT 1
SPAULDING TURNPIKE
EXIT 3
EXIT 4
ARBORETUM DR
PEASE SPUR RR
COLEMAN DR
NIMBLE HILL RD
FOX RUN RD
SHATTUCK WAY
WOODBURY AVE
PATTERSON LN
GUILFORD RR NEWINGTON BRANCH

480 1390 460 0 170 875 425
635 1385 2685 1120 3805 2020 350 3665 890 1020 4685 2910 3045 4685 160 620 60 370
435 410 210 360 120 255
30 0 105 0 75 0 0 255 5 5 0 5
215 5 30 55 725 5 250 890 5 130 20 35
645 915 265 0 370 1035 205
160 25 75 170 600 30 95 935 10 25 25 30
420 0 60 180 970 0 395 955 235 75 125 0
150 10 310 50 310 60

0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.2-2 - Newington
2025 No Build
Weekday PM Peak Hour Volumes
Sheet 1 of 2

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig040202a.dgn

New Hampshire DOT
Department of Transportation

ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
PISCATAQUA RIVER
DOVER
NEWINGTON
NEW HAMPSHIRE
MAINE

US 4
4
BOSTON HARBOR RD
SPUR RD
DOVER POINT RD
EXIT 5
EXIT 6
HILTON DR
WENTWORTH TER
COTE DR
DOVER POINT RD
HOMESTEAD LN
PINEVIEW LN
TOLL PLAZA
SPAULDING TURNPIKE
16

1035
1325
980
475
1455
1590
5195
10
990
4205
40
1630
2890
1315
630
985
5185
45
5
5145
304

40 965 30
20
30
10
5
0
5
85 1300 90

5
5
40

980
10
10
5
625
5

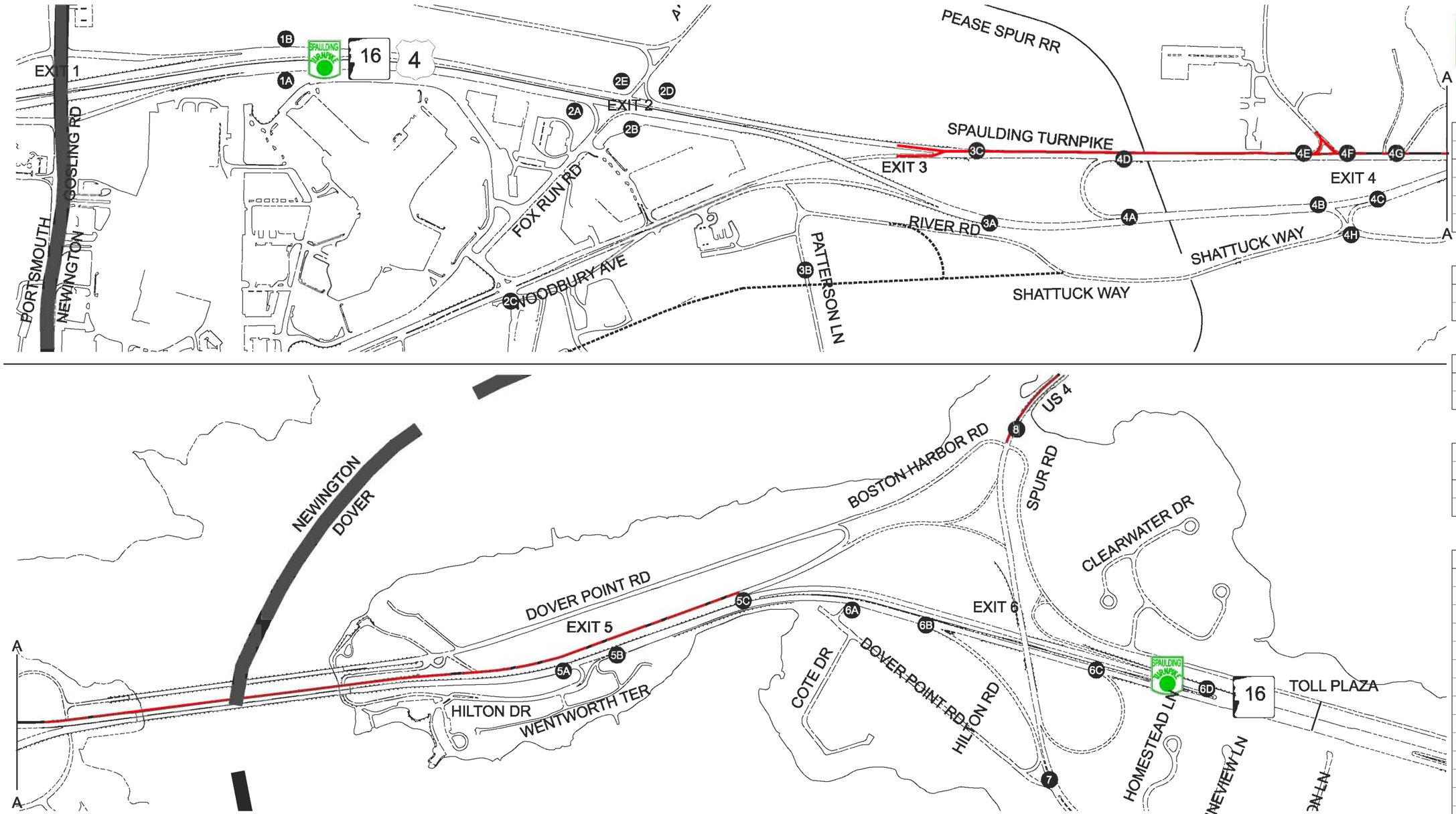
DOVER POINT RD

N
0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.2-2 - Dover
2025 No Build
Weekday PM Peak Hour Volumes
Sheet 2 of 2

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig040202b.dgn



New Hampshire DOT
Department of Transportation

Arterial LOS

Node		2025 LOS
From	To	
2C	3C	D
3B	4H	C
7	NORTH	D
8	WEST	E

Signalized Intersection LOS

Node	2025 LOS
2C	B
8	D

Unsignalized Intersection LOS

Node	2025 LOS
3B	A
4H	B

Weave Analysis LOS

Node		2025 LOS
From	To	
4E	3C	F
6A	6B	B

Ramp Junction LOS

Node	2025 LOS
2A	B
2B	B
3A	B
3C	F
4B	C
4C	B
4E	F
4F	F
5A	B
5B	B
6A	C
6B	C
6C	B
6D	C

Legend:

CAPACITY DEFICIENCY

Freeway LOS

Node		2025 LOS
From	To	
Spaulding Turnpike NB		
1A	2A	C
2B	3A	B
4A	4B	C
4C	5A	C
5B	6A	C
6C	TOLL	B

Freeway LOS

Node		2025 LOS
From	To	
Spaulding Turnpike SB		
TOLL	6D	D
6D	5C	D
5C	4G	F
4E	3C	F
3C	2D	D
2E	1B	D

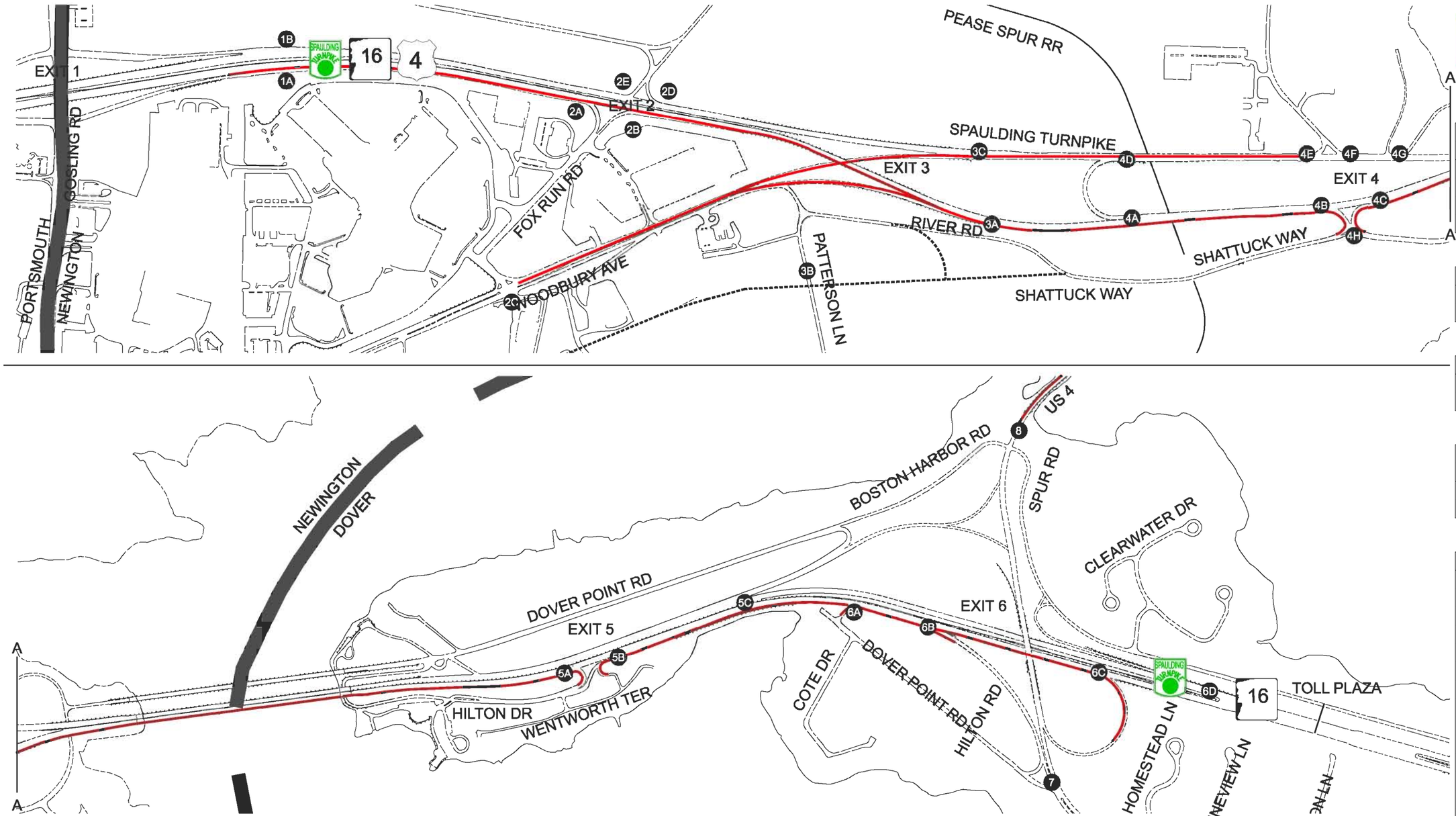
N

0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.2-3
Level of Service Summary
2025 No Build Condition
Weekday AM Peak Hour

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig040203.dgn



New Hampshire DOT
Department of Transportation

Arterial LOS

Node		2025 LOS
From	To	
2C	3C	E
3B	4H	C
7	NORTH	D
8	WEST	E

Signalized Intersection LOS

Node	2025 LOS
2C	B
8	C

Unsignalized Intersection LOS

Node	2025 LOS
3B	B
4H	D

Weave Analysis LOS

Node		2025 LOS
From	To	
4E	4D	F
6A	6B	F

Ramp Junction LOS

Node	2025 LOS
2A	D
2B	D
3A	F
3C	D
4B	F
4C	F
4E	C
4F	D
5A	F
5B	F
6A	F
6B	F
6C	F
6D	B

Legend:

CAPACITY DEFICIENCY

Freeway LOS

Node		2025 LOS
From	To	
Spaulding Turnpike NB		
1A	2A	E
2B	3A	E
4A	4B	F
4C	5A	F
5B	6A	F
6C	TOLL	D

Freeway LOS

Node		2025 LOS
From	To	
Spaulding Turnpike SB		
TOLL	6D	B
6D	5C	B
5C	4G	D
4E	3C	D
3C	2D	C
2E	1B	C

N

0 375 750 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.2-4
Level of Service Summary
2025 No Build Condition
Weekday PM Peak Hour

Date Created7/19/2006 j:\51425\cad\te\phase3\DEIS\fig040204.dgn

New Hampshire DOT
Department of Transportation

LEGEND

- Soundwall Limit of Work
- Wetland (VHB)

Notes:

Wetlands GPS Located by VHB (Jan/Feb 2006)

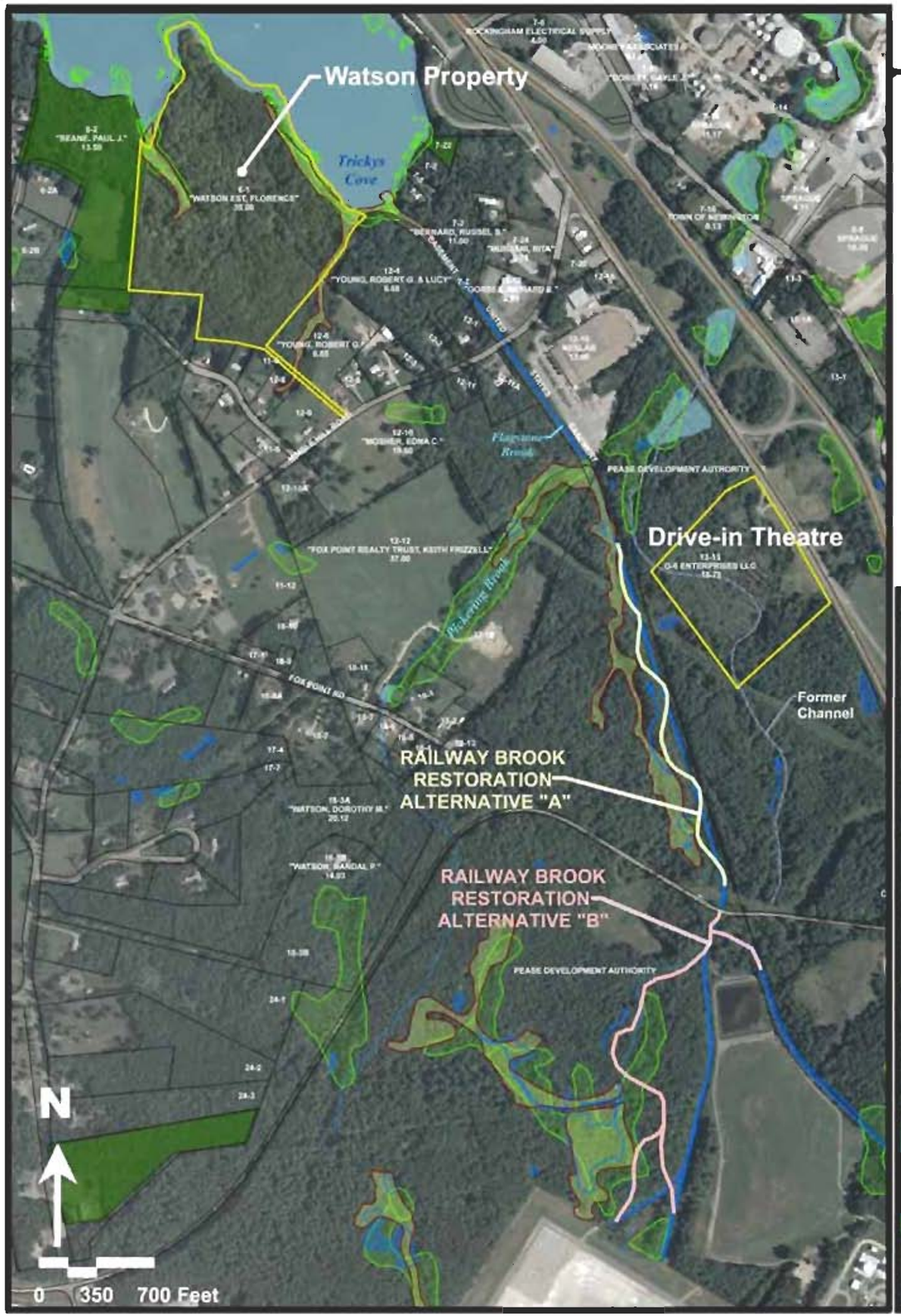
Noise Barrier limit of disturbance based on conceptual design.

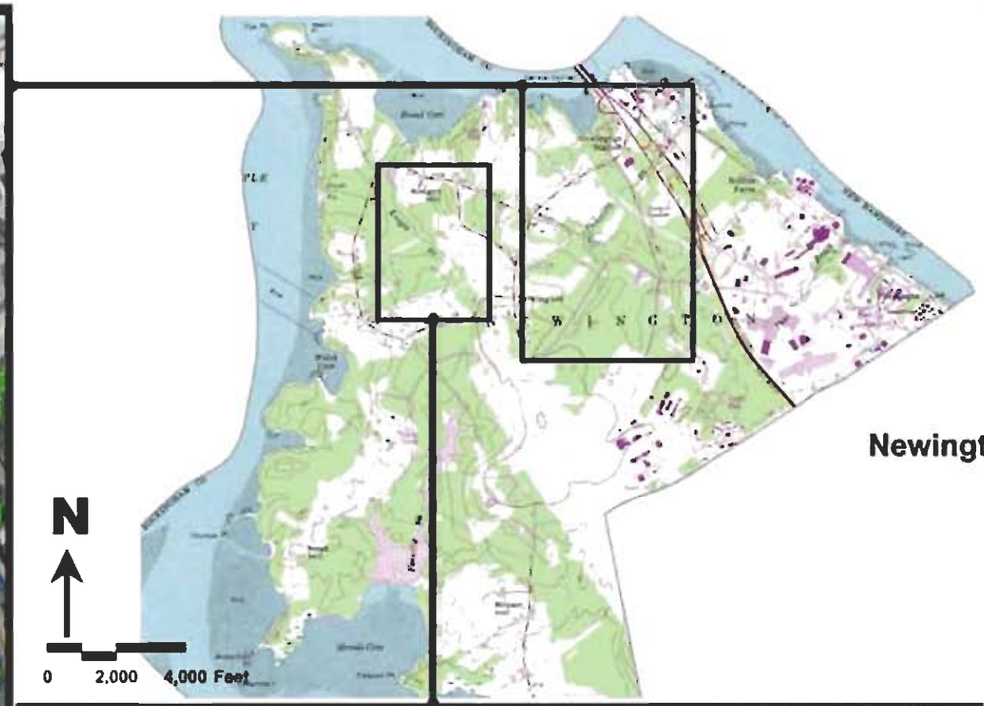
0 200 400 Feet

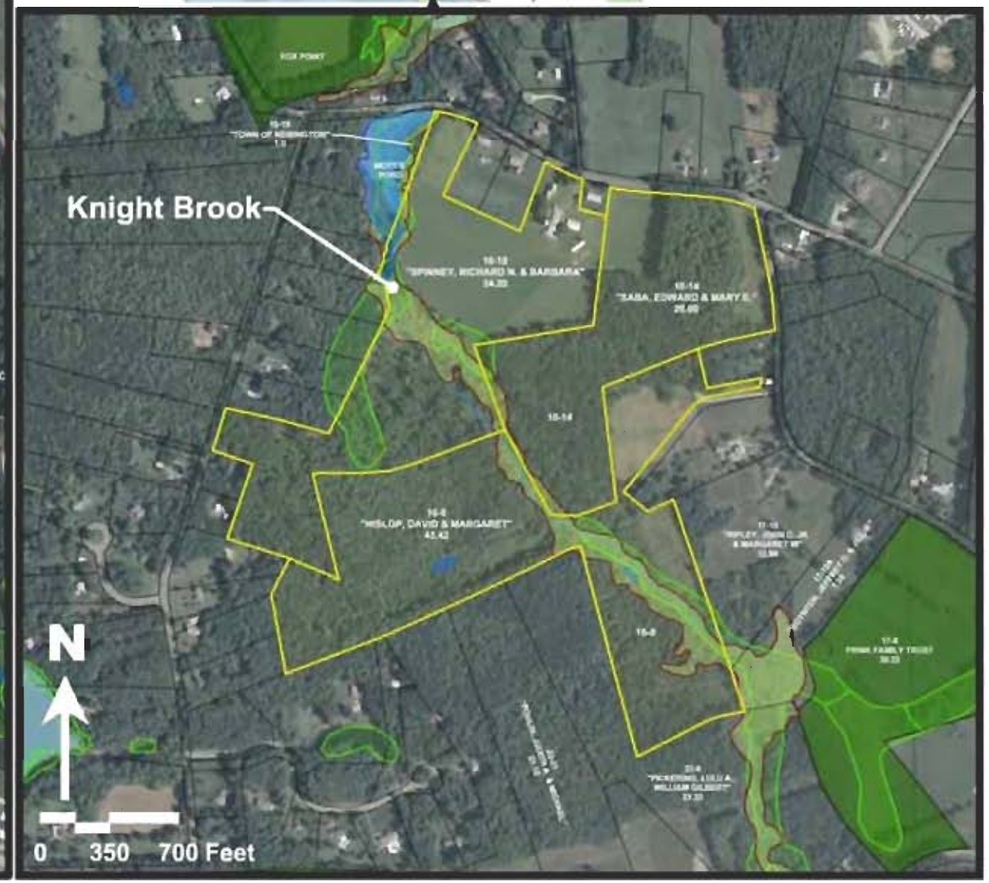
Vanasse Hangen Brustlin, Inc.

Figure 4.6-1
Wetland Impacts
(Noise Barrier Locations)
North of Exit 6, Dover

New Hampshire DOT
Department of Transportation





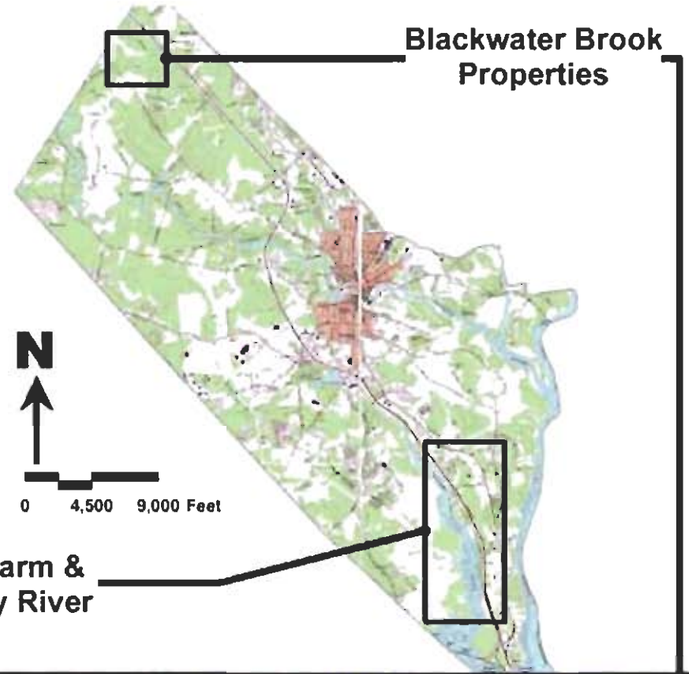


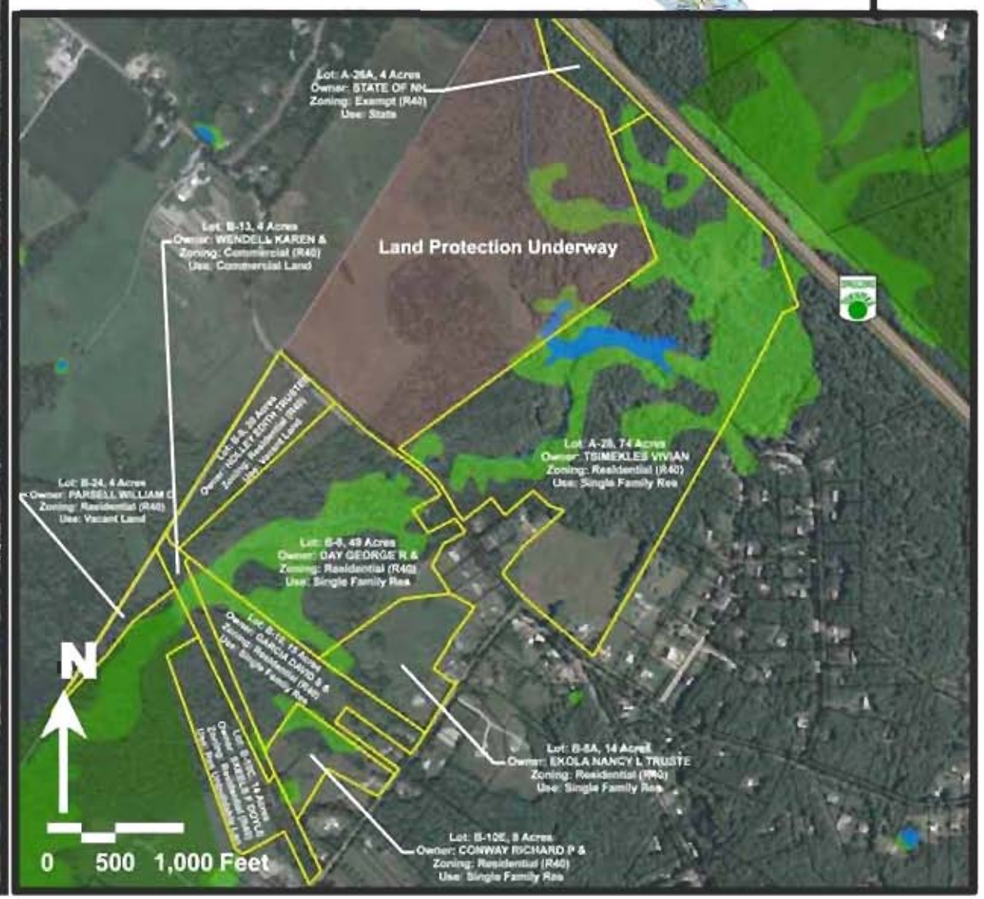
LEGEND

- Streams
- Lot Lines
- Preservation
- NWI (USFWS)
- Prime Wetlands
- Waterbodies
- Conserved Public Lands

Vanasse Hangen Brustlin, Inc.

Figure 4.6-2
Potential Newington Mitigation Sites



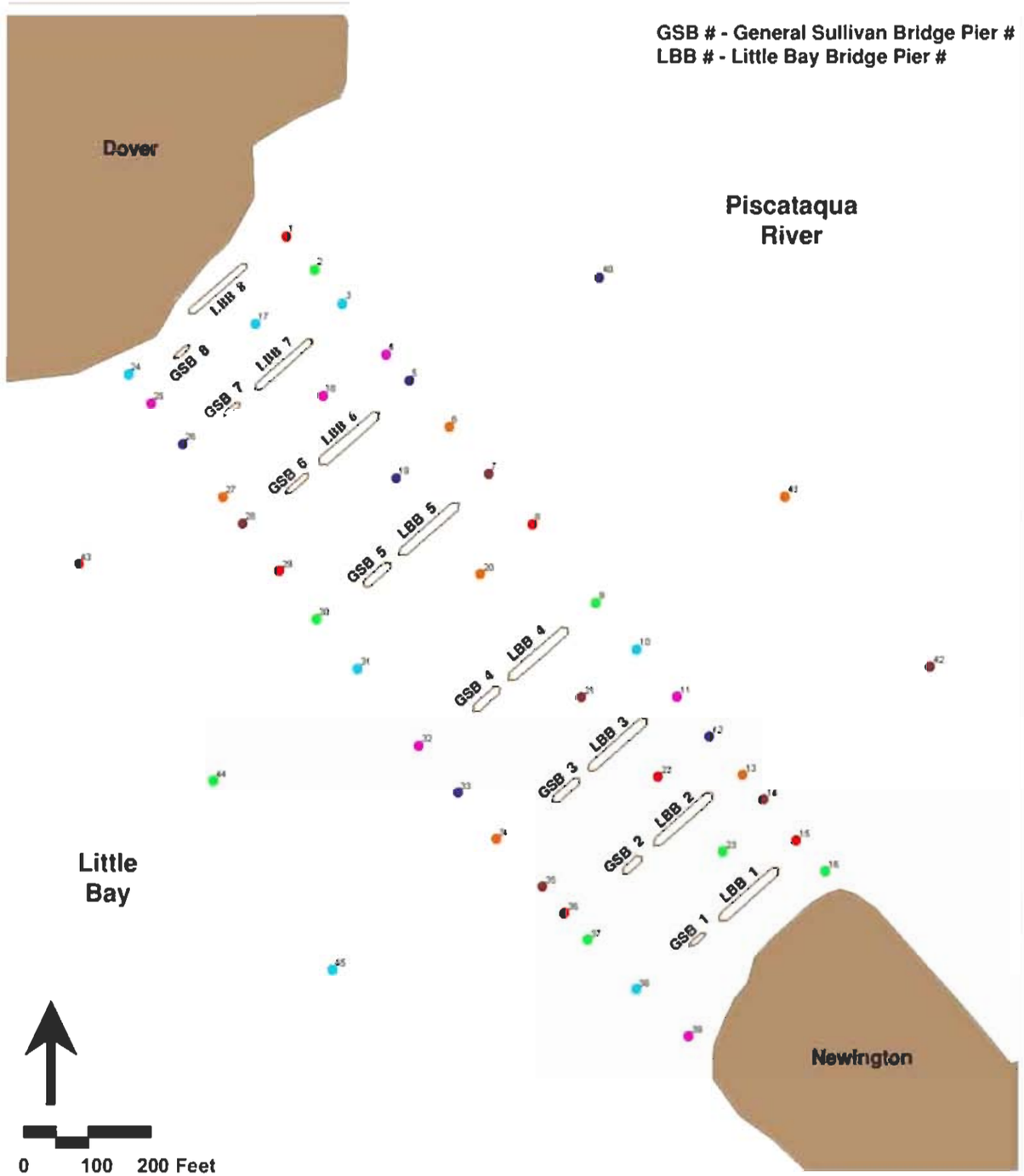


LEGEND

- Streams
- Lot Lines
- Preservation
- Wetlands
- Waterbodies
- Conserved Public Lands

Vanasse Hangen Brustlin, Inc.

Figure 4.6-3
Potential Dover Mitigation Sites



Vanasse Hangen Brustlin, Inc.

Figure 4.10-1
Current Velocity Model Data Locations

● Model Observation Points

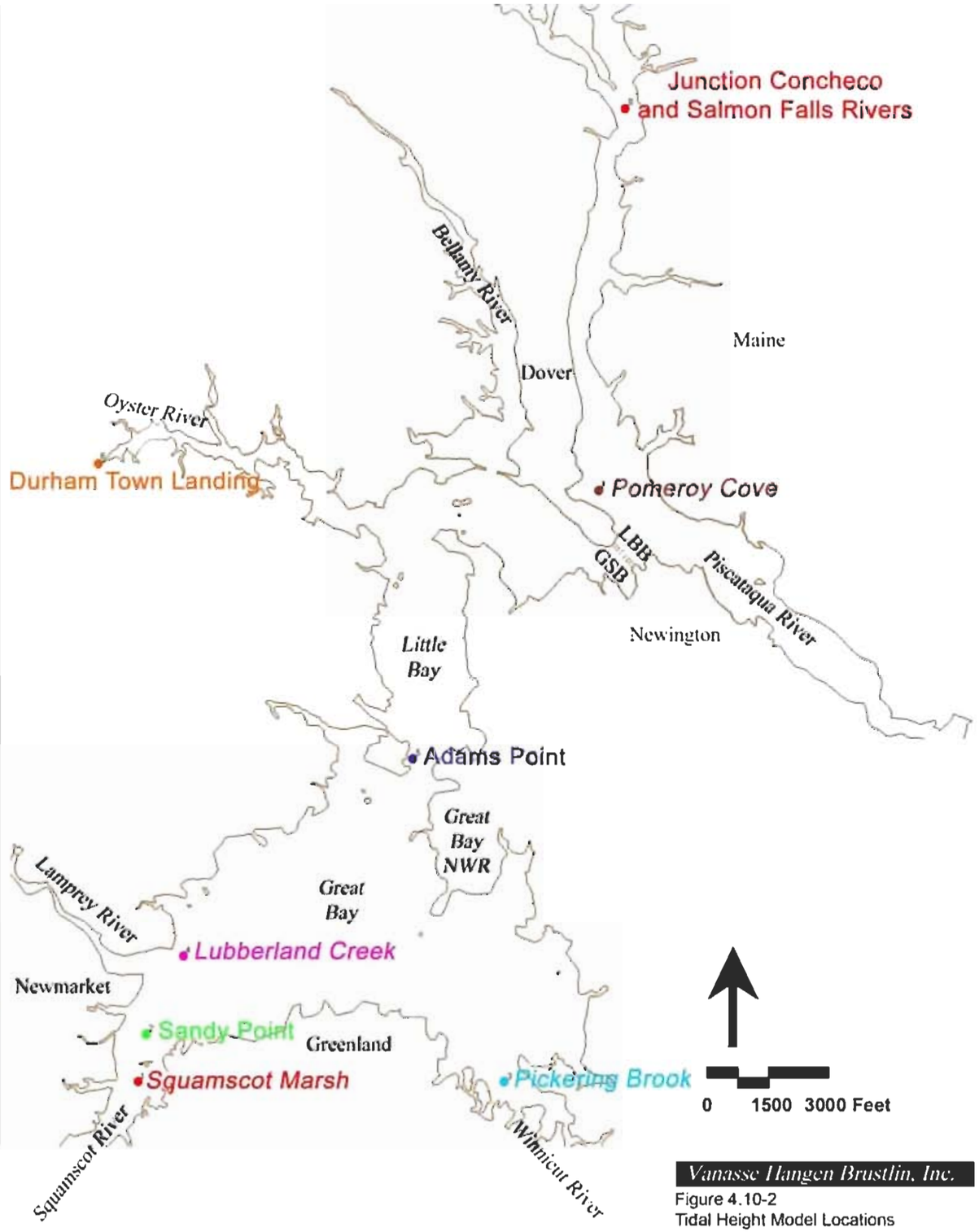


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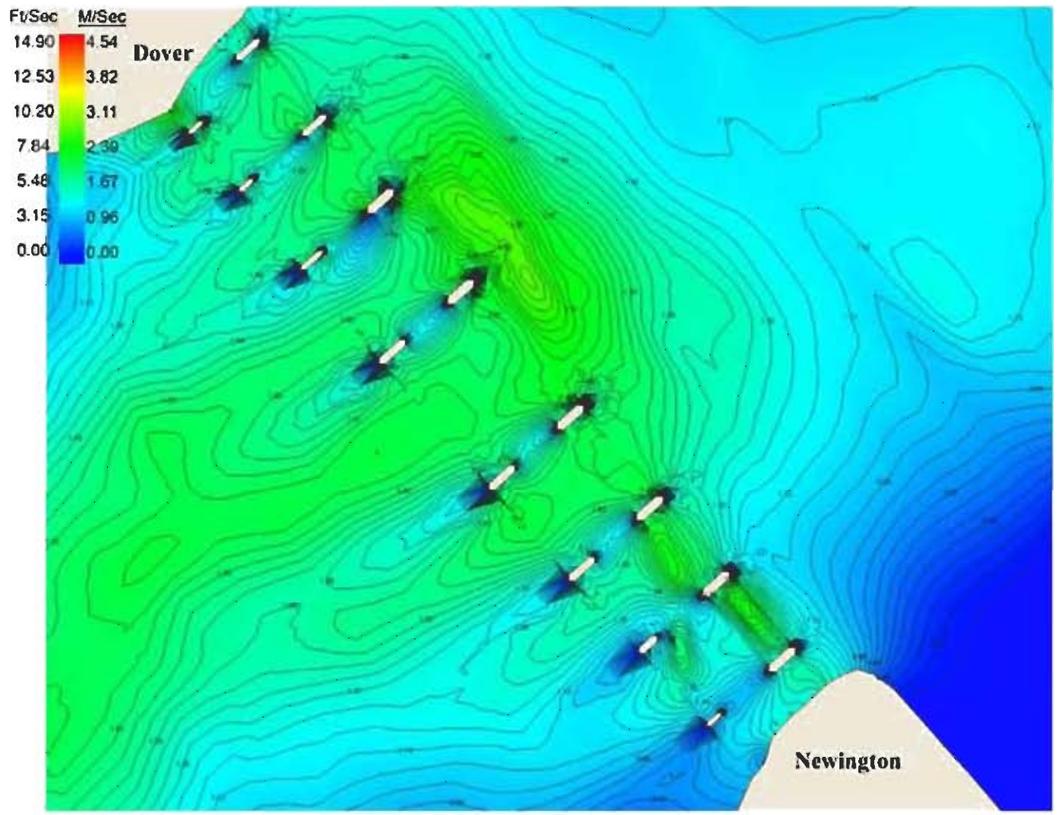
Figure 4.10-2
Tidal Height Model Locations

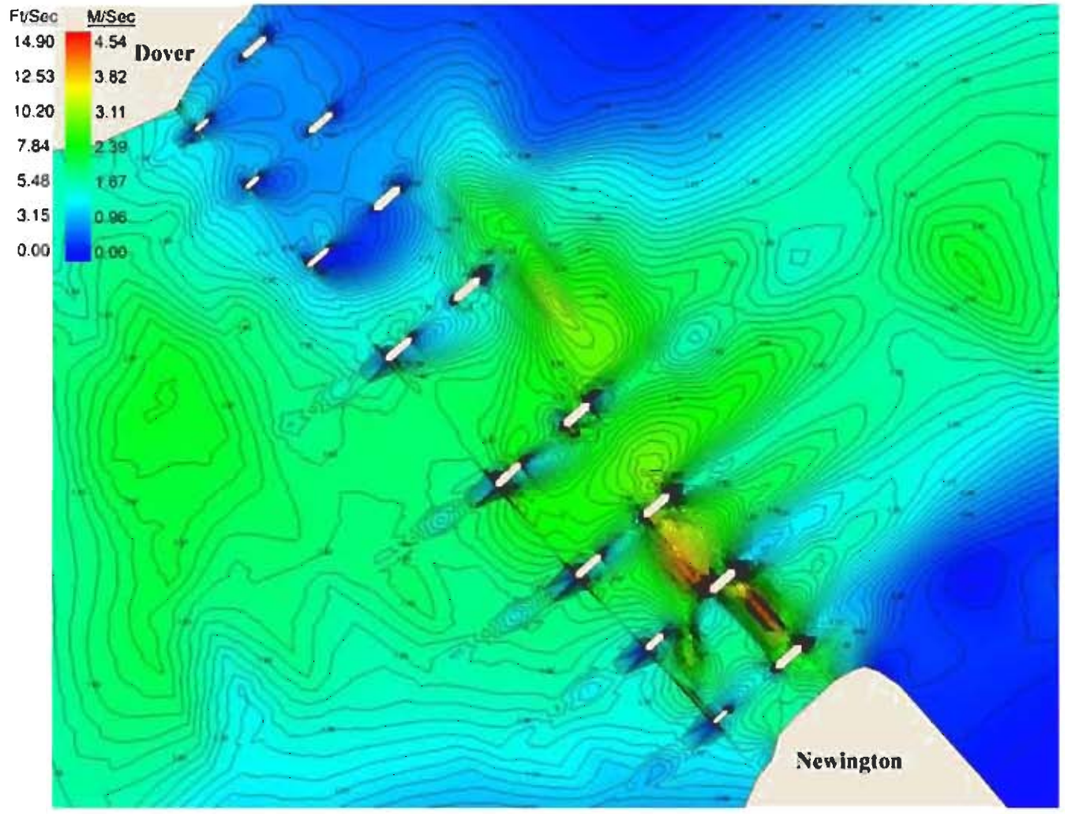


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-3
Maxium Flood Currents for
Case Study 1 (Existing Conditions)

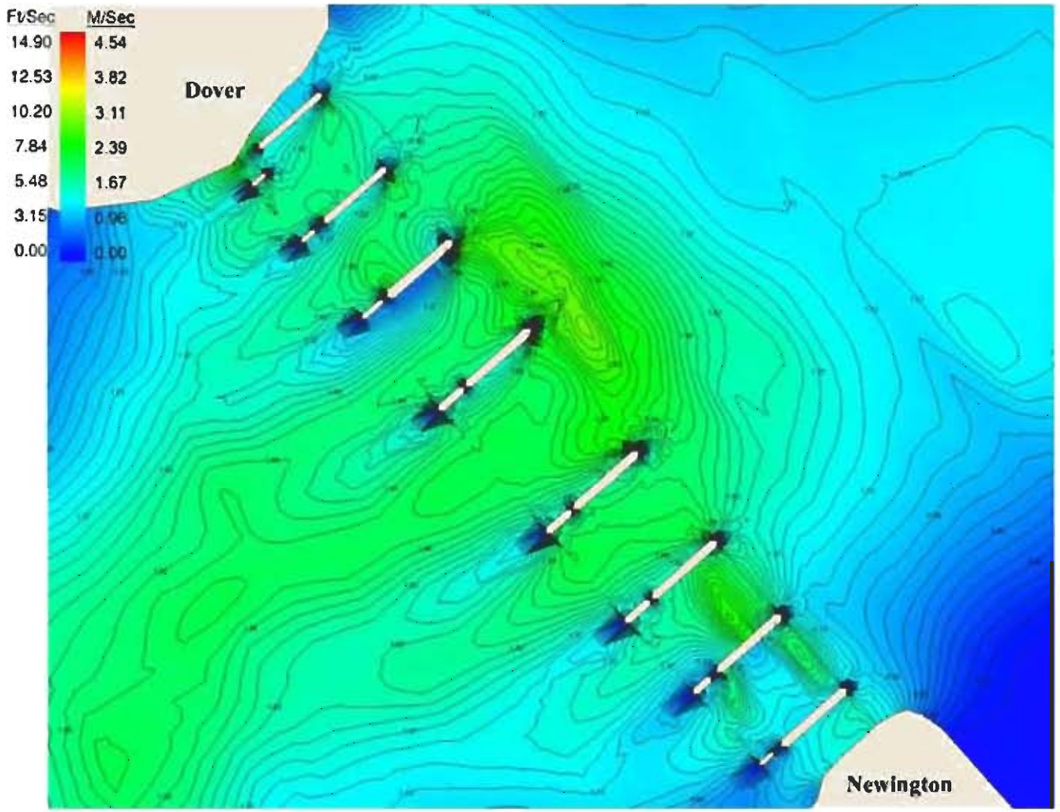


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-4
Maximum Ebb Currents for
Case Study 1 (Existing Conditions)

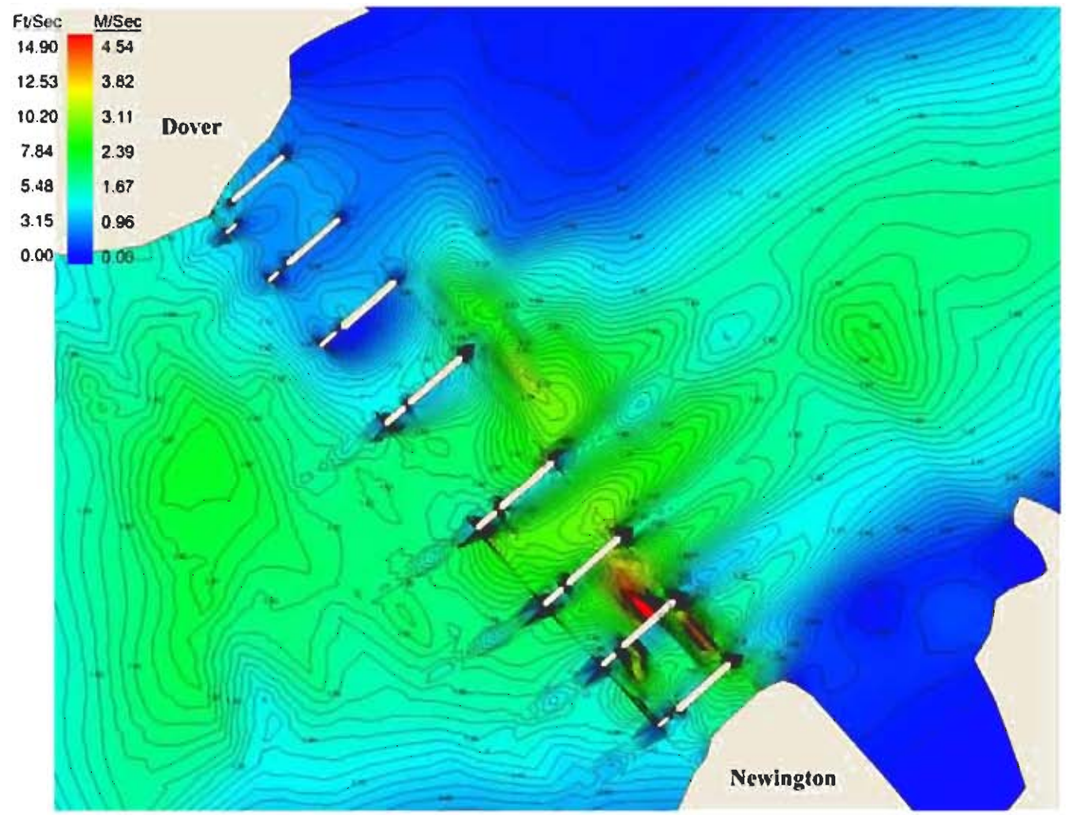


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-5
Maximum Flood Currents for
Case Study 2 (Hydraulic Alternative 1)

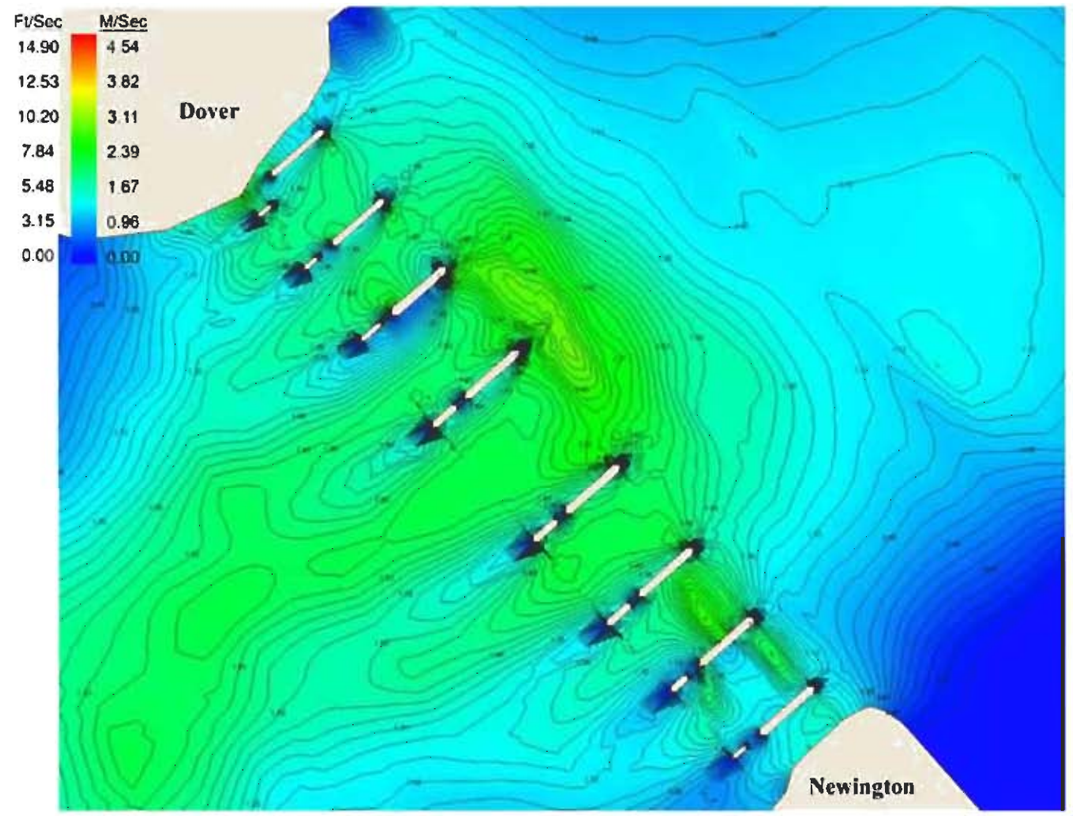


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

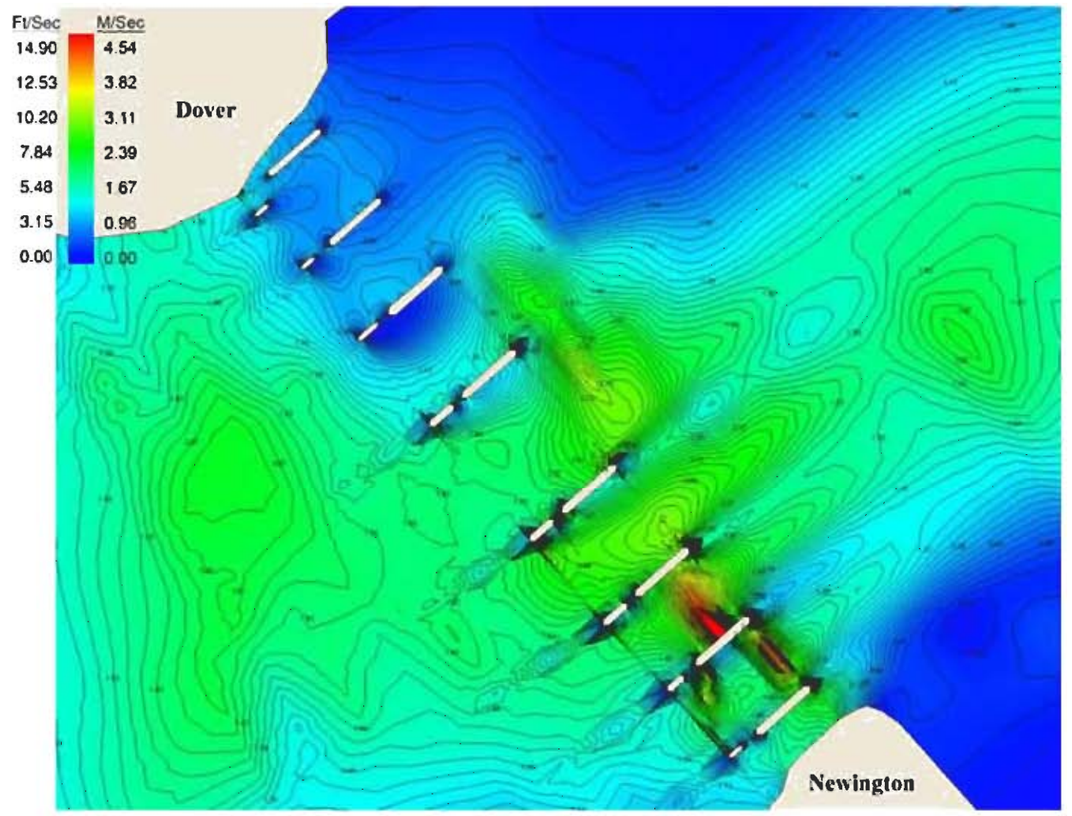
Vanasse Hangen Brustlin, Inc.

Figure 4.10-6
Maximum Ebb Currents for
Case Study 2 (Hydraulic Alternative 1)



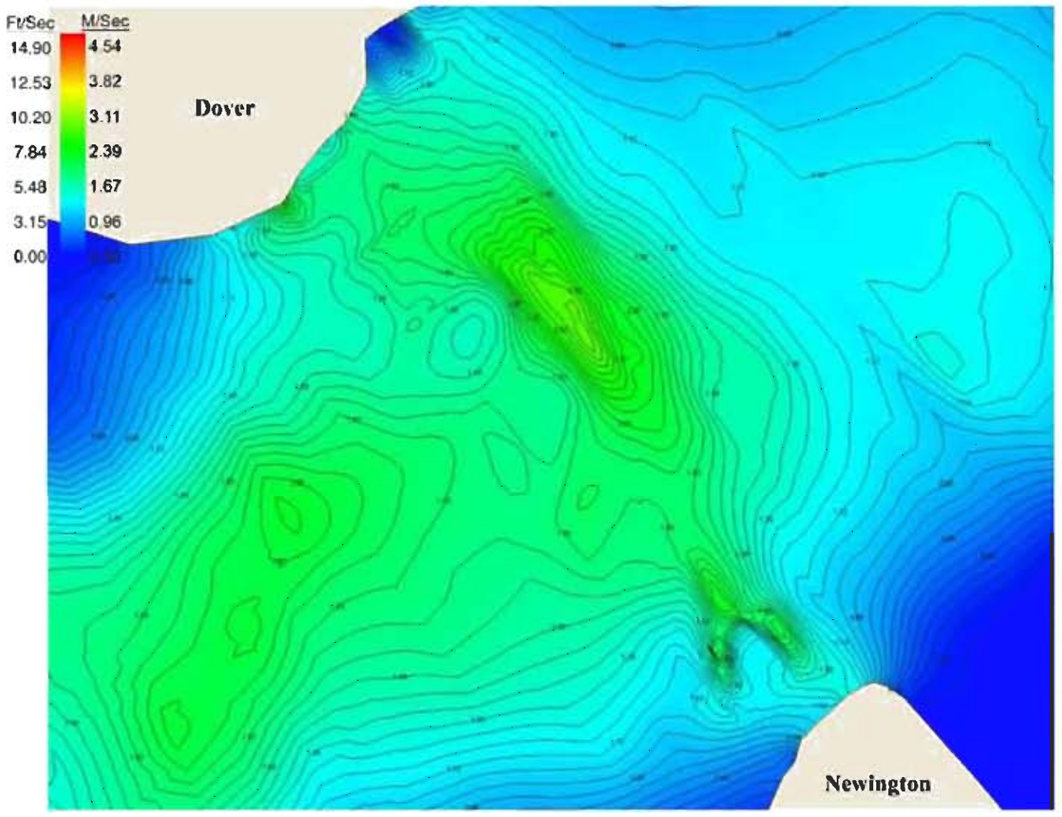
Vanasse Hangen Brustlin, Inc.

Figure 4.10-7
Maximum Flood Currents for
Case Study 3 (Hydraulic Alternative 2)



Vanasse Hangen Brustlin, Inc.

Figure 4.10-8
Maximum Ebb Currents for
Case Study 3 (Hydraulic Alternative 2)

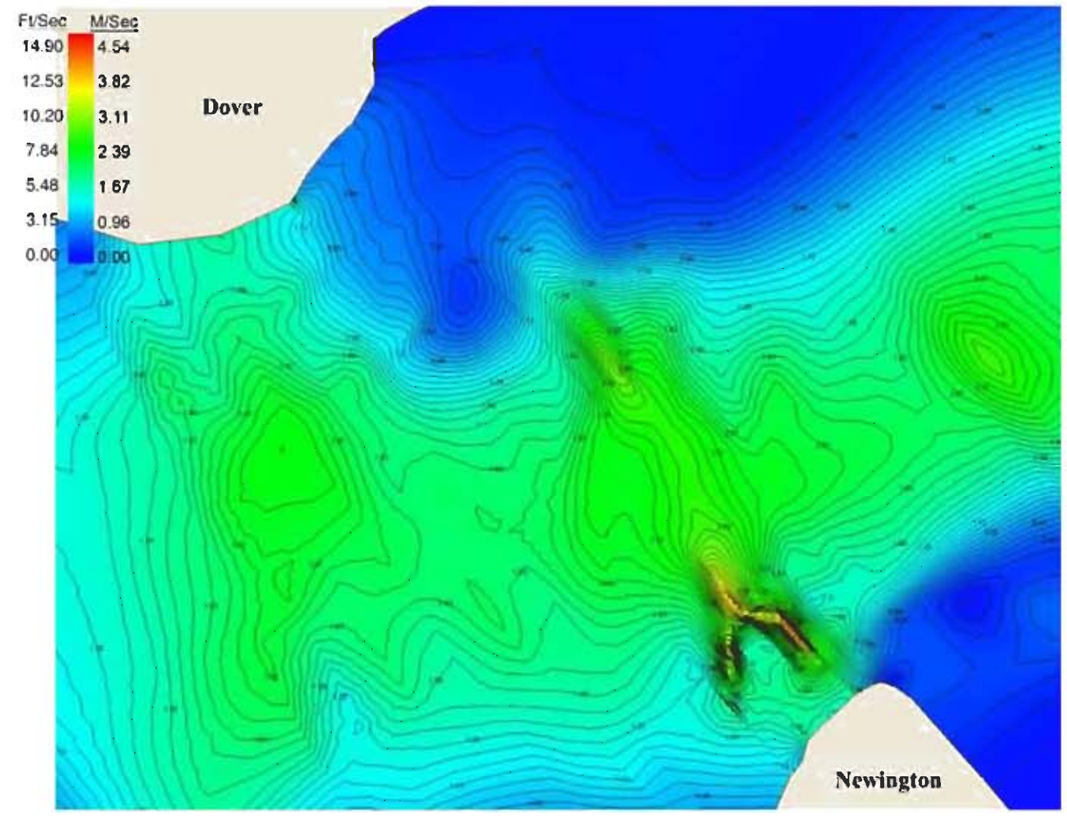


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-9
Maximum Flood Currents for
Case Study 4 (No Piers)

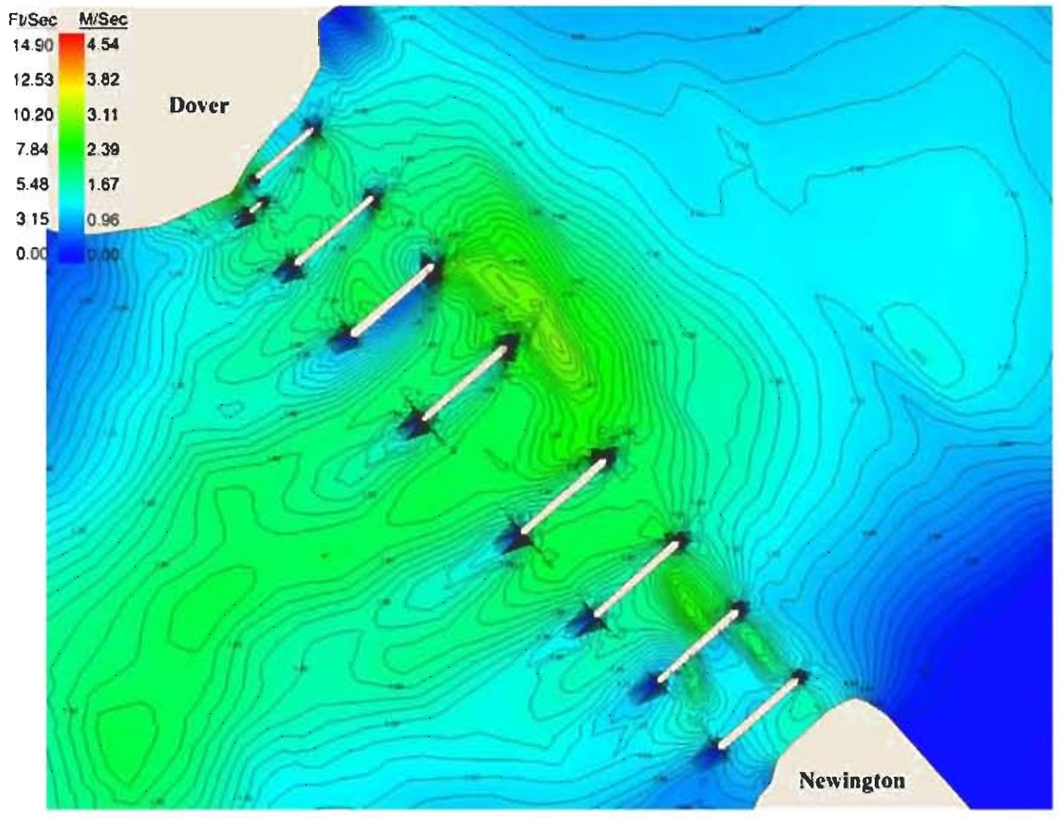


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-10
Maximum Ebb Currents for
Case Study 4 (No Piers)

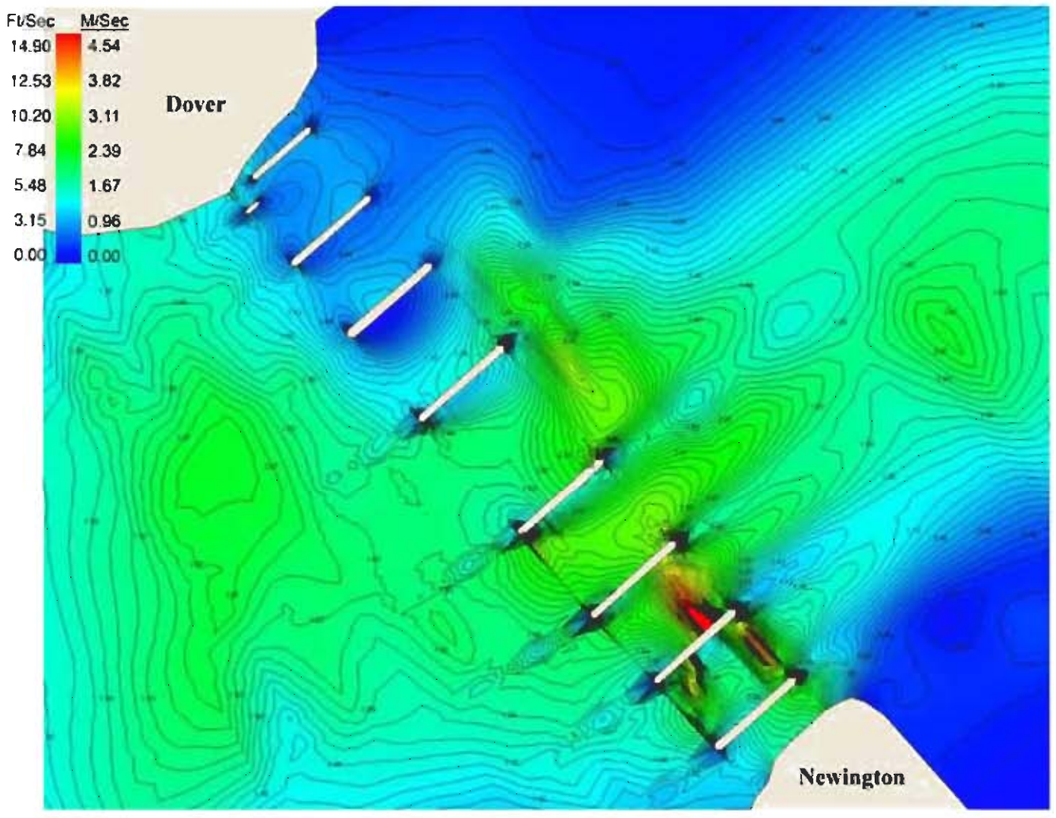


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-11
Maximum Flood Currents for
Case Study 5 (Combined Piers)

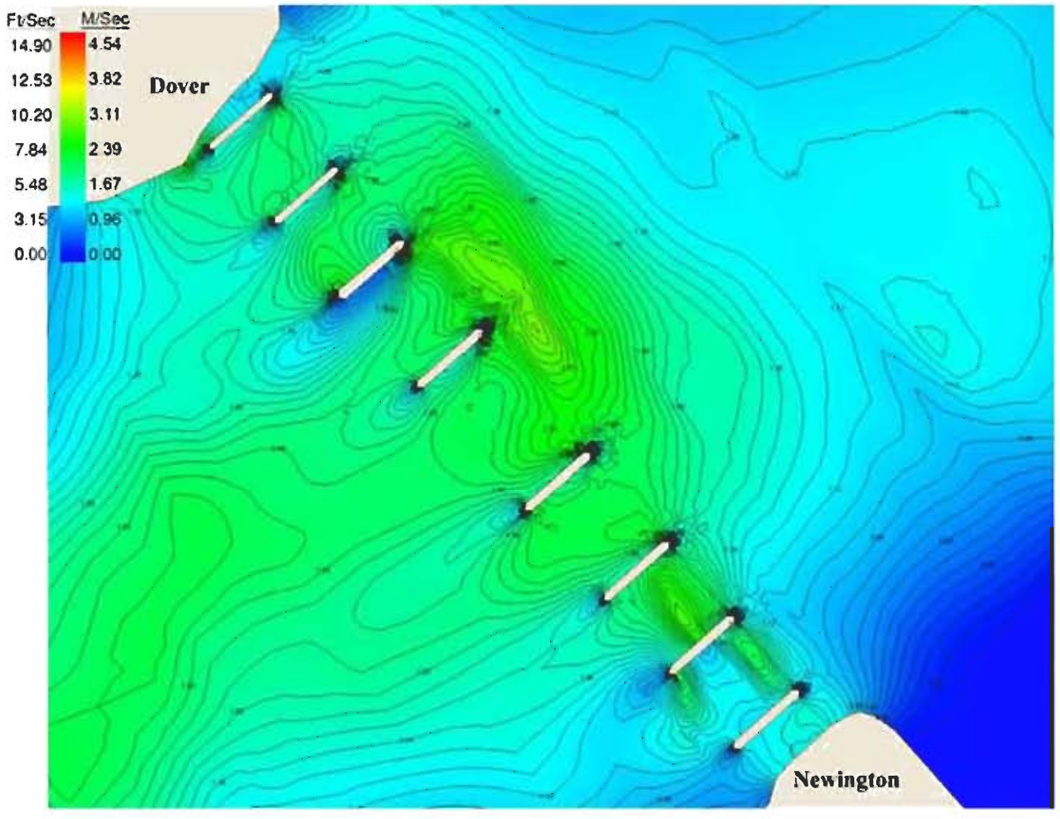


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-12
Maximum Ebb Currents for
Case Study 5 (Combined Piers)

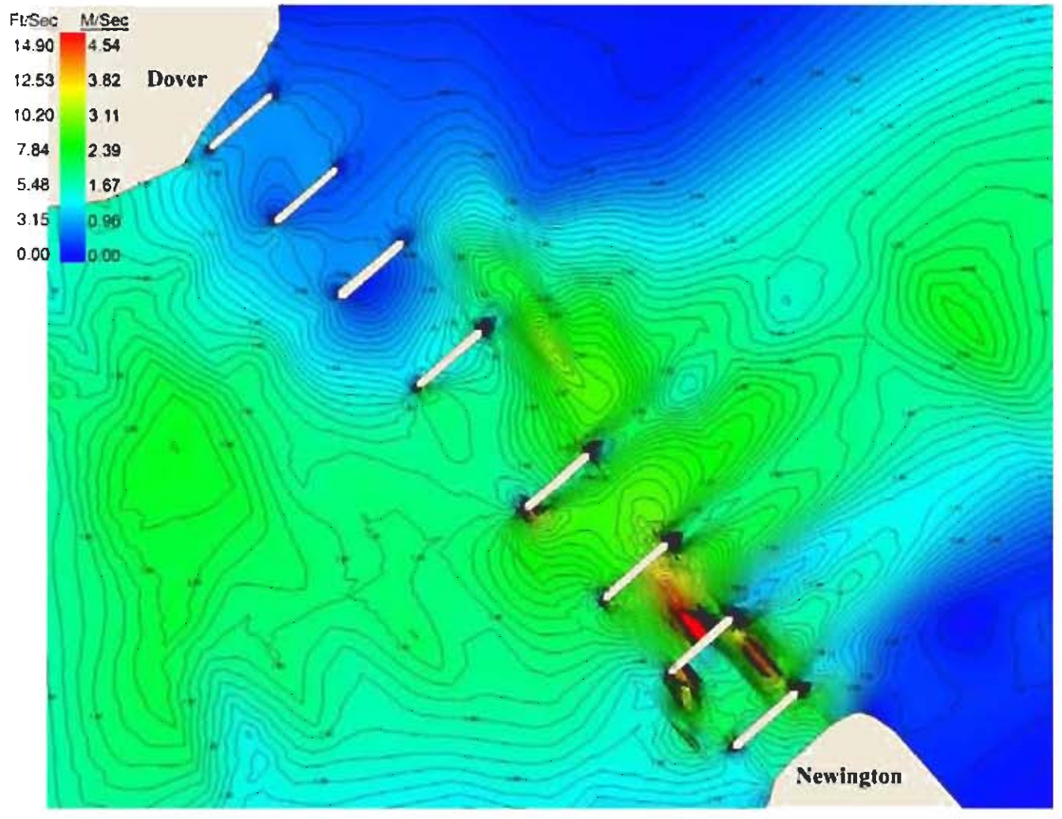


Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-13
Maximum Flood Currents for
Case Study 6
(General Sullivan Bridge Removed)



Note: Velocity contours are shown in metric units.
Contour Interval is 0.8 Meters/Second.
1 Meter/Second = 3.281 Feet/Second

0 60 120 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-14
Maximum Ebb Currents for
Case Study 6
(General Sullivan Bridge Removed)

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LITTLE BAY

TRICKY'S COVE

PROPOSED PIER

GENERAL SULLIVAN BRIDGE

1 2 3 4 5 6 7 8 9

LITTLE BAY BRIDGES

DOVER POINT

EXISTING PIER

NEWINGTON

DOVER

BLOODY POINT

Legend:

- SURFACE WATERS
- TOWNLINE

INTERTIDAL HABITATS

- HARD BOTTOM WITH ROCKWEED
- MUDFLAT
- ROCK / ALGAL / ABUNDANT MUSSEL
- ROCK / ALGAL / SPARSE MUSSEL
- SALT MARSH
- SCATTERED ROCK / ALGAL / SOFT SEDIMENT

SUBTIDAL HABITATS

- KELP BED
- MACROALGAL (NON-KELP) BED
- MUSSEL REEF
- OTHER

N

0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.10-15
Pier Impacts on
Intertidal and Subtidal Habitats
Preferred Alternative

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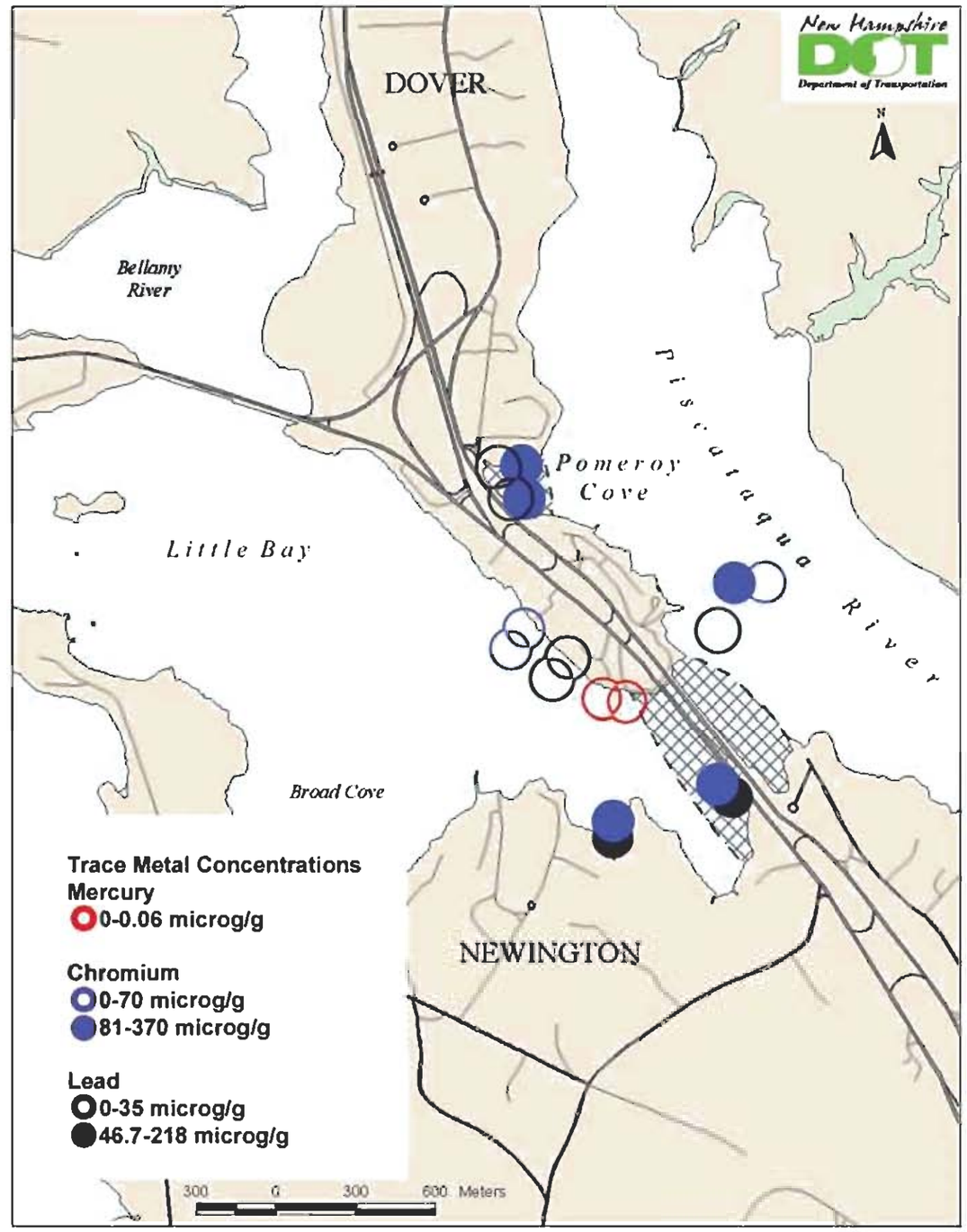

Note: Cross-hatched area represents the limits of study for the benthic (subtidal) habitat survey

NOAA (1999) Screening Threshold Effects Levels for Marine Sediment Toxicity are as follows:
Mercury: 0.13 mg/g , Chromium: 52.3 mg/g; Lead 30.24 mg/g

Vanasse Hangen Brustlin, Inc.

Figure 4.10-16
Water Quality Sampling Stations of NHDES Shellfish Program

New Hampshire DOT
Department of Transportation

DURHAM
ROCKINGHAM COUNTY
STRAFFORD COUNTY
LITTLE BAY
SCAMMELL BRIDGE
4
ROYALS COVE
BAYVIEW PARK
SPUR RD
BOSTON HARBOR RD
CLEARWATER DR
BELLAMY RIVER
TRICKY'S COVE
HILTON PARK
DOVER HIGH ST
ADAPTATIONS
EXIT 5
EXIT 6
POMEROY COVE
COTE DR
DOVER POINT RD
HILTON RD
TOLL PLAZA
SPAULDING TURNPIKE
16
GENERAL SULLIVAN BRIDGE
LITTLE BAY BRIDGES
DOVER POINT
HILTON PARK
HILTON DR
WENTWORTH TER
SHATTUCK WAY (FORMERLY RIVER RD)
BLOODY POINT
NEWINGTON
DOVER
HOMESTEAD LN
PINEVIEW LN
PEARSON LN
DOVER POINT RD
NEW HAMPSHIRE
MAINE
PISCATAQUA RIVER

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- Impacted Receptor Locations

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.14-1
Dover Alternative 3
Noise Impact Locations

Note: not all impacted noise receptors are identified on this figure, since the noise study extended north of the study area depicted here.

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New Hampshire DOT
Department of Transportation

PORTSMOUTH
NEWINGTON
PEASE BLVD
GOSLING RD
EXIT 1
SPAULDING TURNPIKE
16
4
ARBORETUM DR
EXIT 2
TRADEPORT CONNECTOR
RAILWAY BROOK
PEASE SPUR RR
EXIT 3
FORMER DRIVE-IN
PEASE SPUR
EXIT 4N
PICKERING BROOK
NIMBLE HILL RD
COLEMAN DR
FLAGSTONE BROOK
TRICKY'S COVE
EXIT 4
DIXON MOBIL
ISAAC DOW HOUSE
BEANE FARM
FOX RUN RD
RIVER RD
WOODBURY AVE
AVERY DR
PISCATAQUA DR
PATTERSON LN
UNNAMED TRIBUTARY 2
SHATTUCK WAY
UNNAMED PONDS
BLOODY POINT
GUILFORD RR NEWINGTON BRANCH
PISCATAQUA RIVER
UNNAMED TRIBUTARY 1
NEW HAMPSHIRE
MAINE

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Newington Interim Safety Improvements
- Impacted Receptor Locations

0 400 800 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.14-2
Newington Alternative 13
Noise Impact Locations

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Alternative 3

LITTLE BAY

ROYALS COVE

BELLAMY RIVER

BOSTON HARBOR RD

SPUR RD

4

Noise Barrier #1
Dover Point Road
Length 4,100 feet
Height 14 feet

DOVER POINT RD

ADAPTATIONS

K9 KAOS

NOISE BARRIER

POMEROY COVE

COTE DR

DOVER POINT RD

HILTON RD

TOLL PLAZA

HOMESTEAD LN

PINEVIEW LN

DOVER POINT RD

DOVER POINT

WENTWORTH

Noise Barrier #2
Wentworth Terrace / Cote Drive
Length 4,200 feet
Height 14 feet

LEGEND

- Conceptual Roadway Improvements
- Pavement Removal
- Newington Interim Improvements
- Proposed Signal
- Conceptual Path
- Proposed Bridge
- Building
- Existing Pavement
- Wetlands
- Water

200 0 200 400
SCALE IN FEET

Vanasse Hangen Brustlin, Inc.

Figure 4.14-3
Proposed Noise Mitigation
Dover - South of Exit 6

New Hampshire DOT
Department of Transportation

Not To Scale

Vanasse Hangen Brustlin, Inc.

Figure 4.14-4
Proposed Noise Mitigation
Dover - North of Exit 6

New Hampshire DOT
Department of Transportation

27-RK-286
27-RK-285
27-RK-275
27-RK-282
27-RK-284 & 287
27-RK-388
Area 62
0.3 acres
Area 58
0.1 acres
Area 49a
13.4 acres
Area 33
5.6 acres
NWN0011
Area 30
8.3 acres
27-RK-283
27-RK-284 & 287
Area 32
0.9 acres
No NHDHR
Site Number
Area 45
0.004 acres
Area 37
0.4 acres
No NHDHR
Site Number
No NHDHR
Site Number
27-RK-154
NWN0010
27-RK-388
Area 41
0.7 acres
No NHDHR
Site Number
NWN0009

Legend

- Alternative 10a Limit of Grading

Archaeological Resource Impacts

- Probable Sensitivity
- Sensitive
- Verified Site

Archaeological Resource

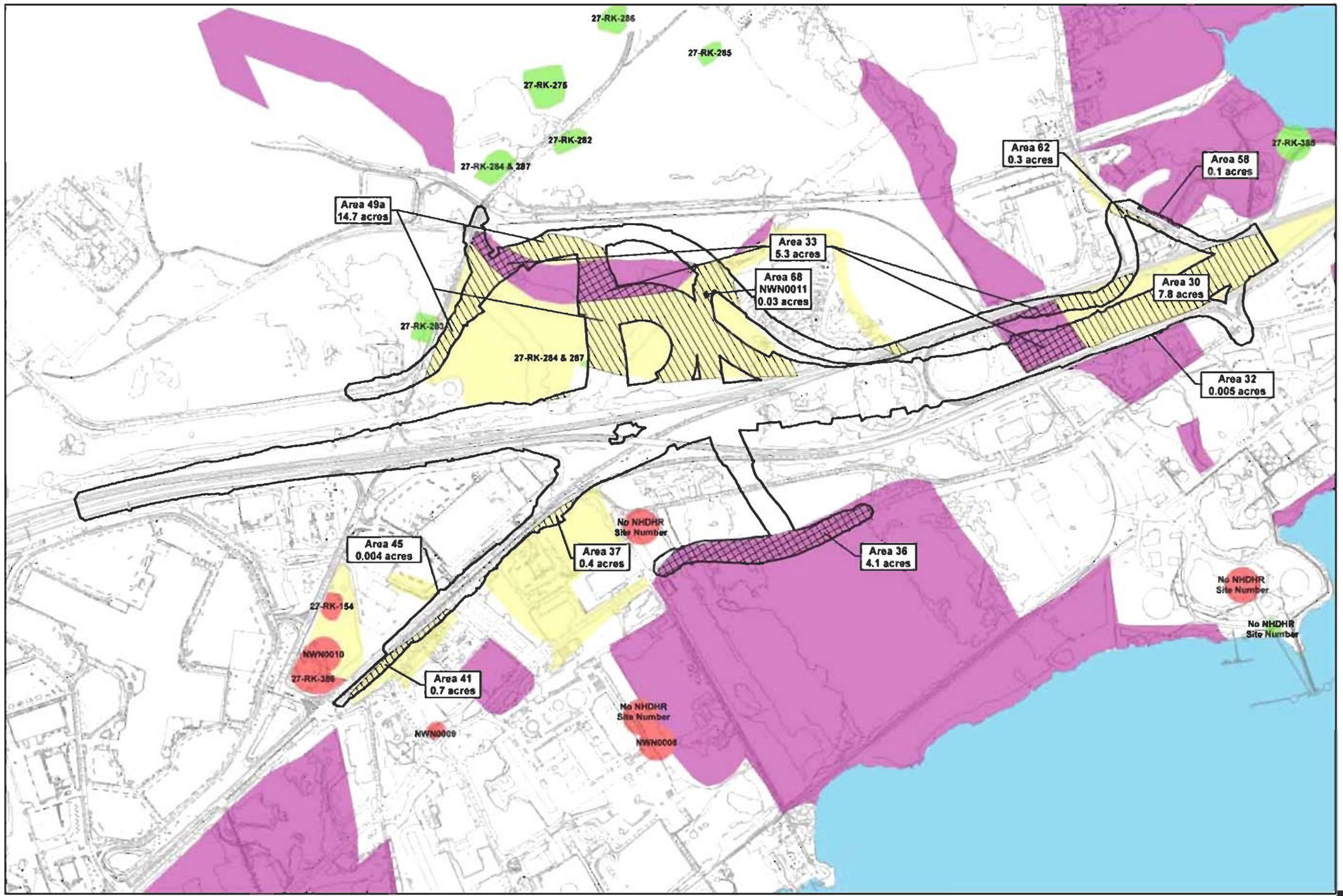
- Probable Sensitivity
- Sensitivity
- Verified Sites & Cem
- Verified Sites-Not Eligible

N

0 300 600 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.17-1
Potential Archaeological Impacts,
Newington Alternative 10A



New Hampshire DOT
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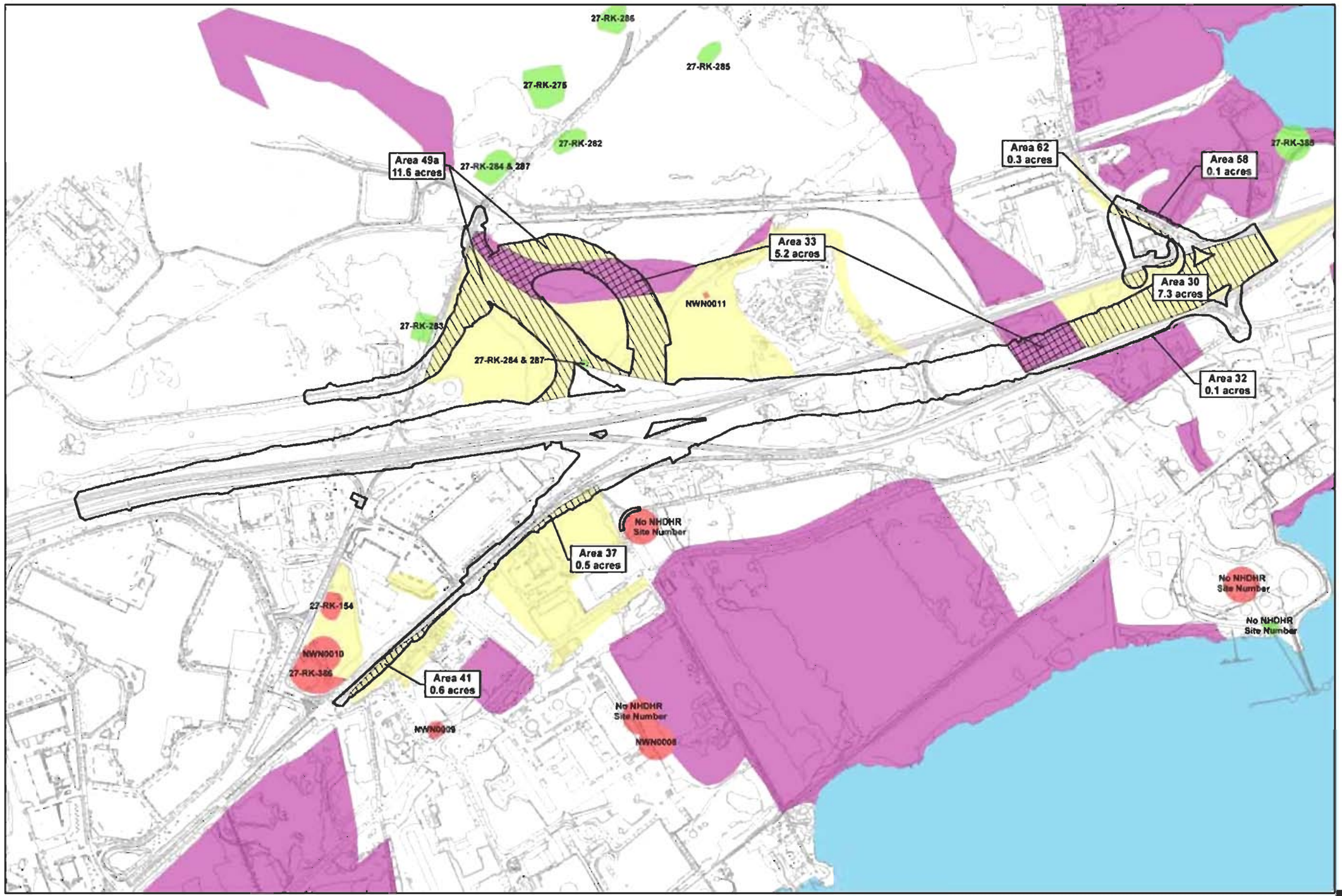
Vanasse Hangen Brustlin, Inc.

Figure 4.17-2
Potential Archaeological Impacts,
Newington Alternative 12A



New Hampshire DOT
Department of Transportation

Legend

- Alternative 13 Limit of Grading

Archeological Resource Impacts

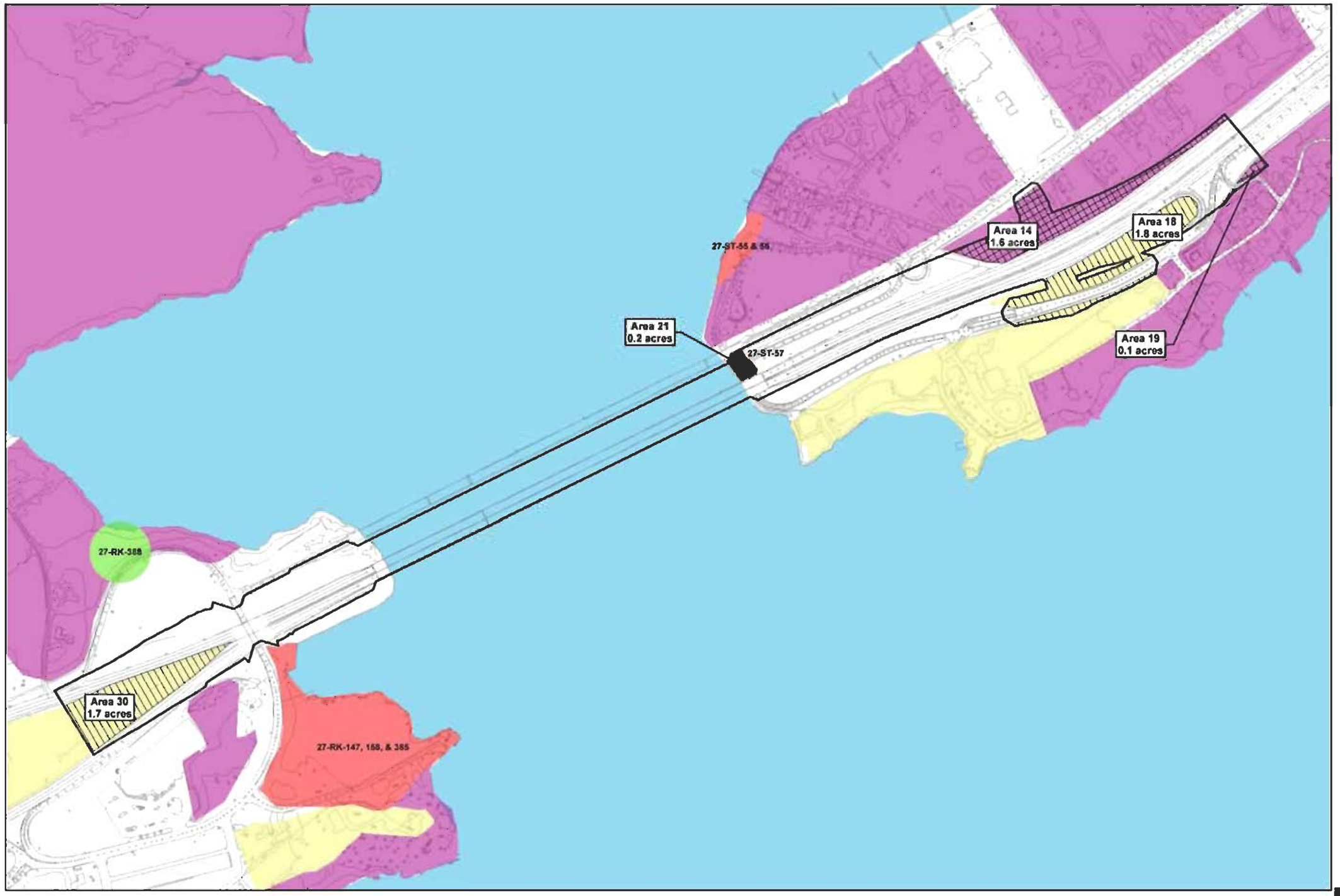
- Probable Sensitivity
- Sensitive
- Verified Site

Archeological Resource

- Probable Sensitivity
- Sensitivity
- Verified Sites & Cem
- Verified Sites-Not Eligible

Vanasse Hangen Brustlin, Inc.

Figure 4.17-3
Potential Archaeological Impacts,
Newington Alternative 13



New Hampshire DOT
Department of Transportation

Legend

- Bridge - Widen & Remove
- Limit of Grading

Archeological Resource Impacts

- Probable Sensitivity
- Sensitive
- Verified Site

Archeological Resource

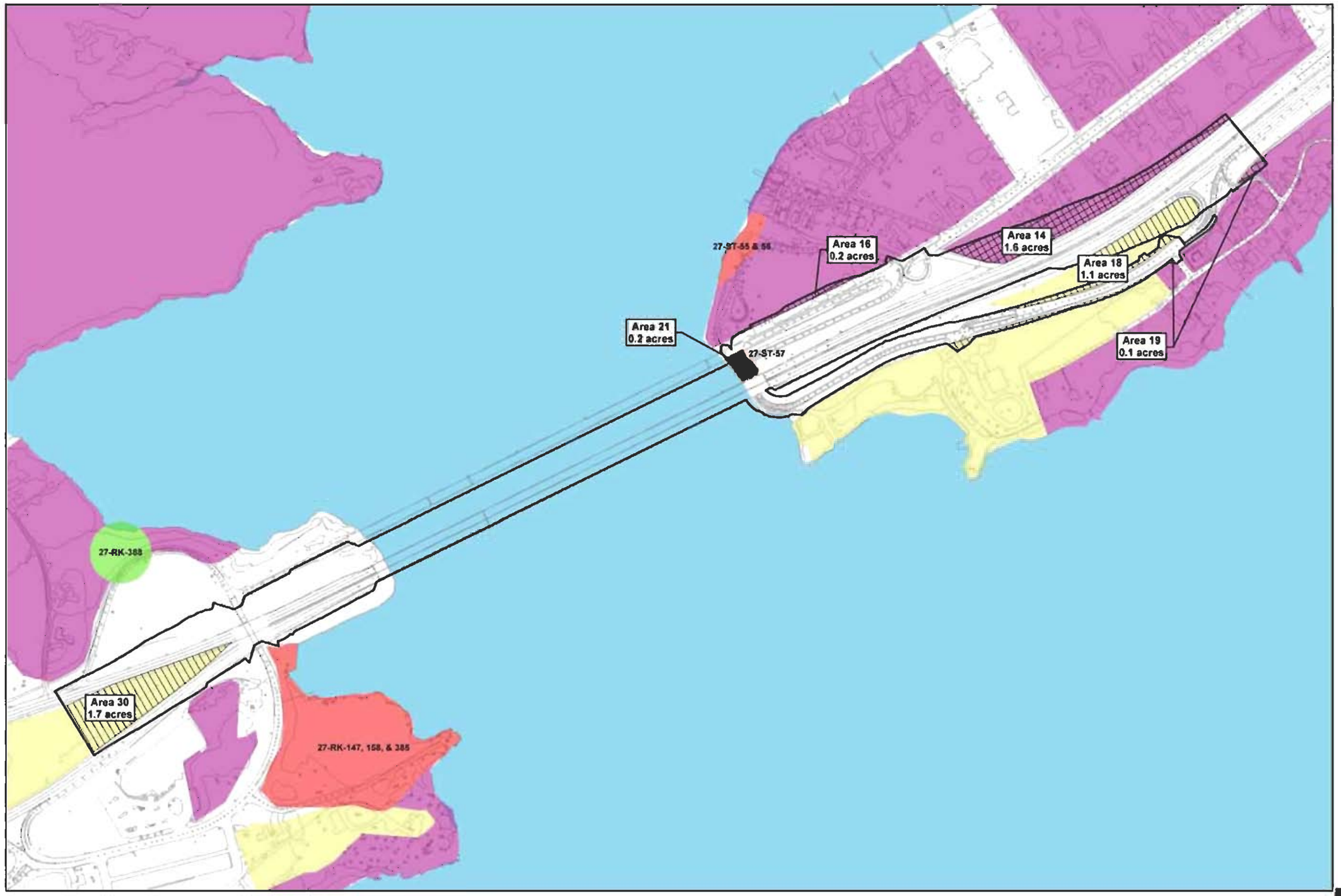
- Probable Sensitivity
- Sensitivity
- Verified Sites & Cem
- Verified Sites-Not Eligible

N

0 175 350 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.17-4
Potential Archaeological Impacts,
Widen West / Remove Alternative



New Hampshire DOT
Department of Transportation

Legend

- Widen & Remove Limit of Grading

Archeological Resource Impacts

- Probable Sensitivity
- Sensitive
- Verified Site

Archeological Resource

- Probable Sensitivity
- Sensitivity
- Verified Sites & Cem
- Verified Sites-Not Eligible

N

0 175 350 Feet

Vanasse Hangen Brustlin, Inc.

Figure 4.17-5
Potential Archaeological Impacts,
Widen West / Rehabilitate Alternative

New Hampshire DOT
Department of Transportation

Legend

- Alternative 2 Limit of Grading

Archeological Resource Impacts

- Probable Sensitivity
- Sensitive
- Venfied Site

Archeological Resource

- Probable Sensitivity
- Sensitivity
- Venfied Sites & Cem
- Venfied Sites-Not Eligible

Vanasse Hangen Brustlin, Inc.

Figure 4.17-6
Potential Archaeological Impacts,
Dover Alternative 2

New Hampshire DOT
Department of Transportation

Legend

- Alternative 3 Limit of Grading

Archeological Resource Impacts

- Probable Sensitivity
- Sensitive
- Verified Site

Archeological Resource

- Probable Sensitivity
- Sensitivity
- Verified Sites & Cem
- Verified Sites-Not Eligible

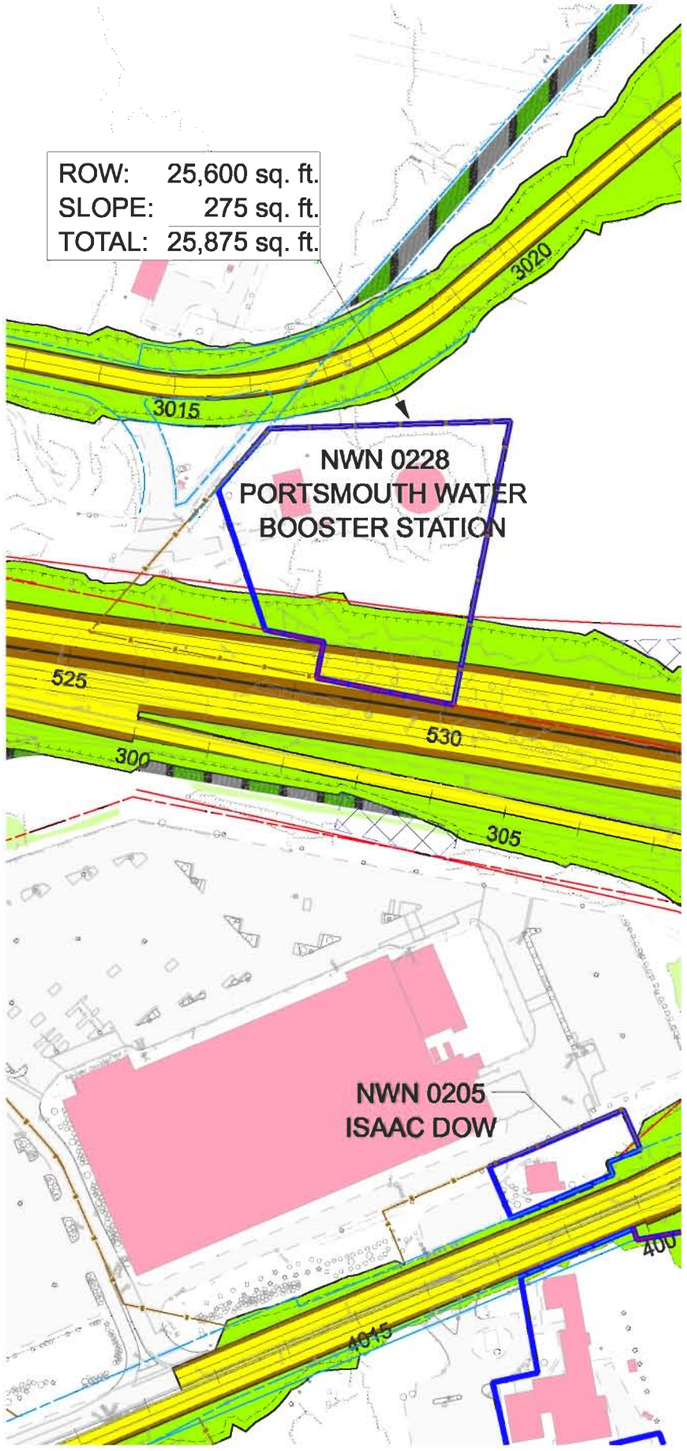
N

0 200 400 Feet

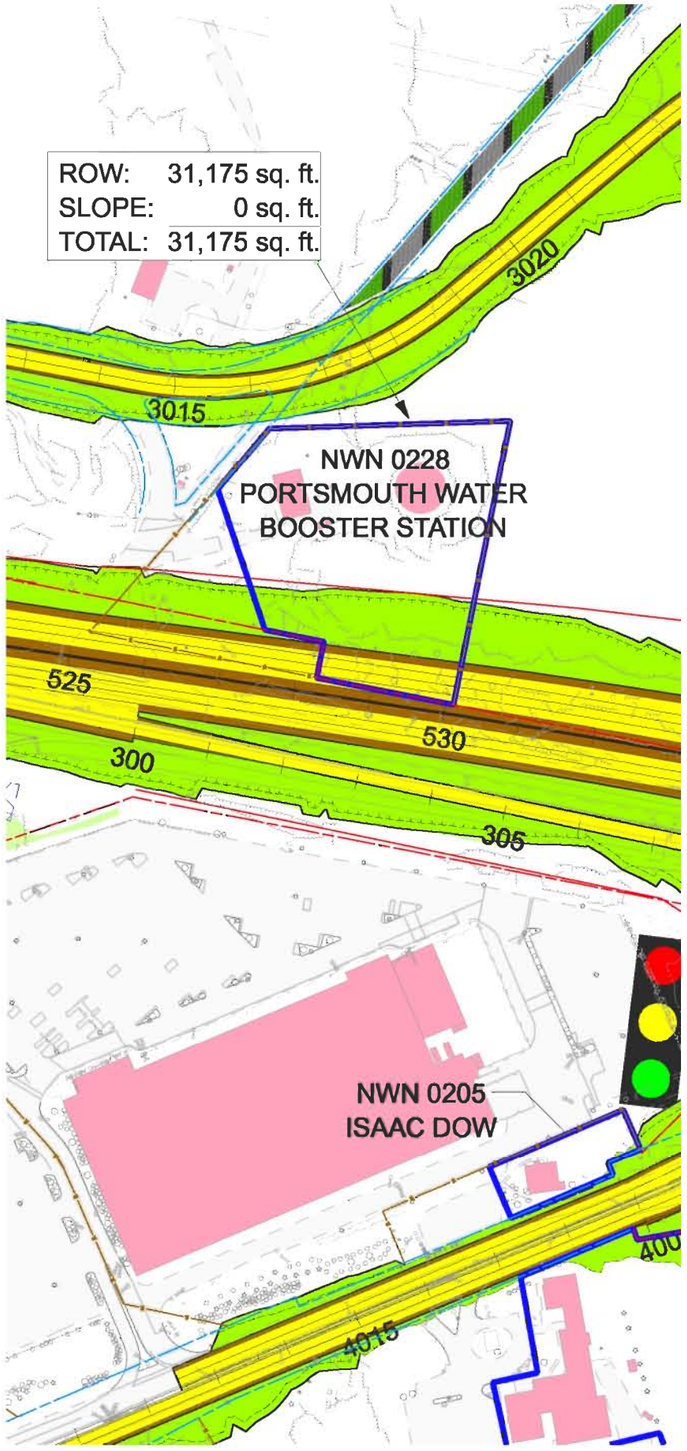
Vanasse Hangen Brustlin, Inc.

Figure 4.17-7
Potential Archaeological Impacts,
Dover Alternative 3

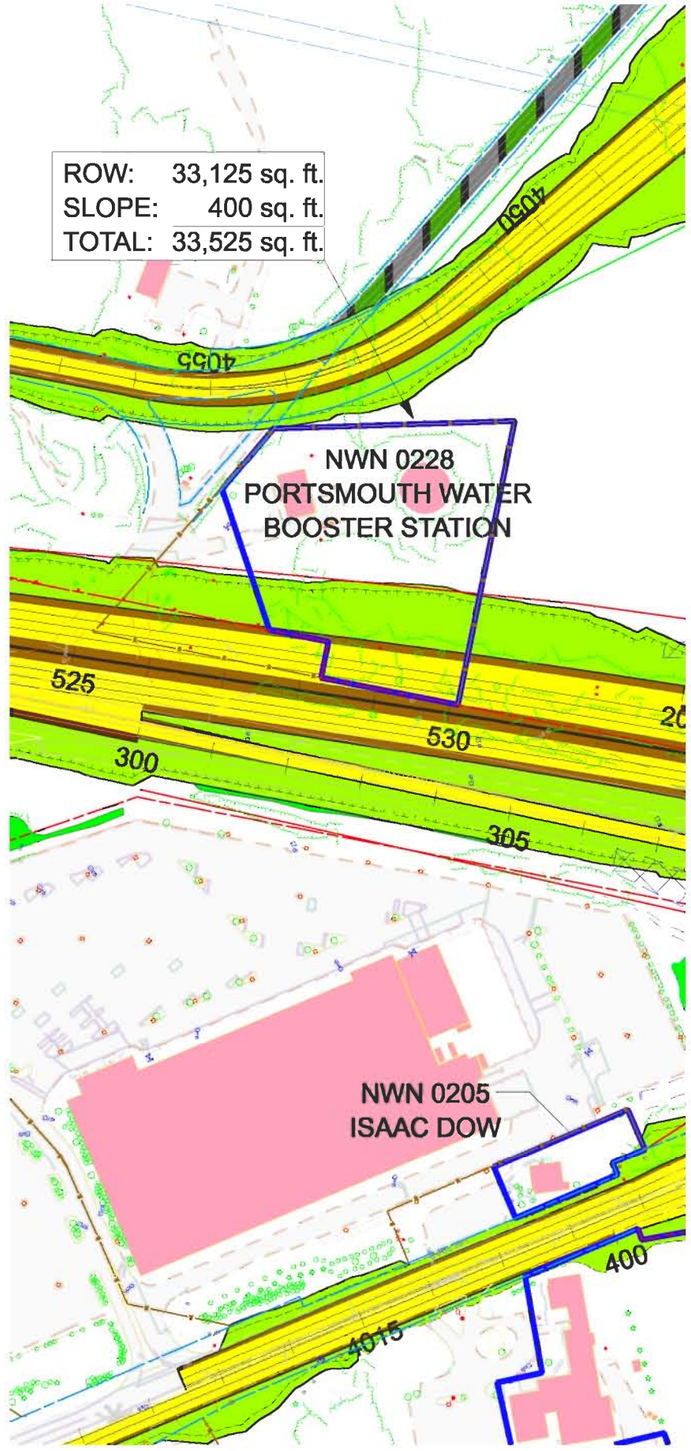
NEWINGTON ALTERNATIVE 10A



NEWINGTON ALTERNATIVE 12A



NEWINGTON ALTERNATIVE 13



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Historic Structure (Listed or Eligible for Listing)

0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 5.4-1
Section 4(f) Impacts
NWN 0228
Newington

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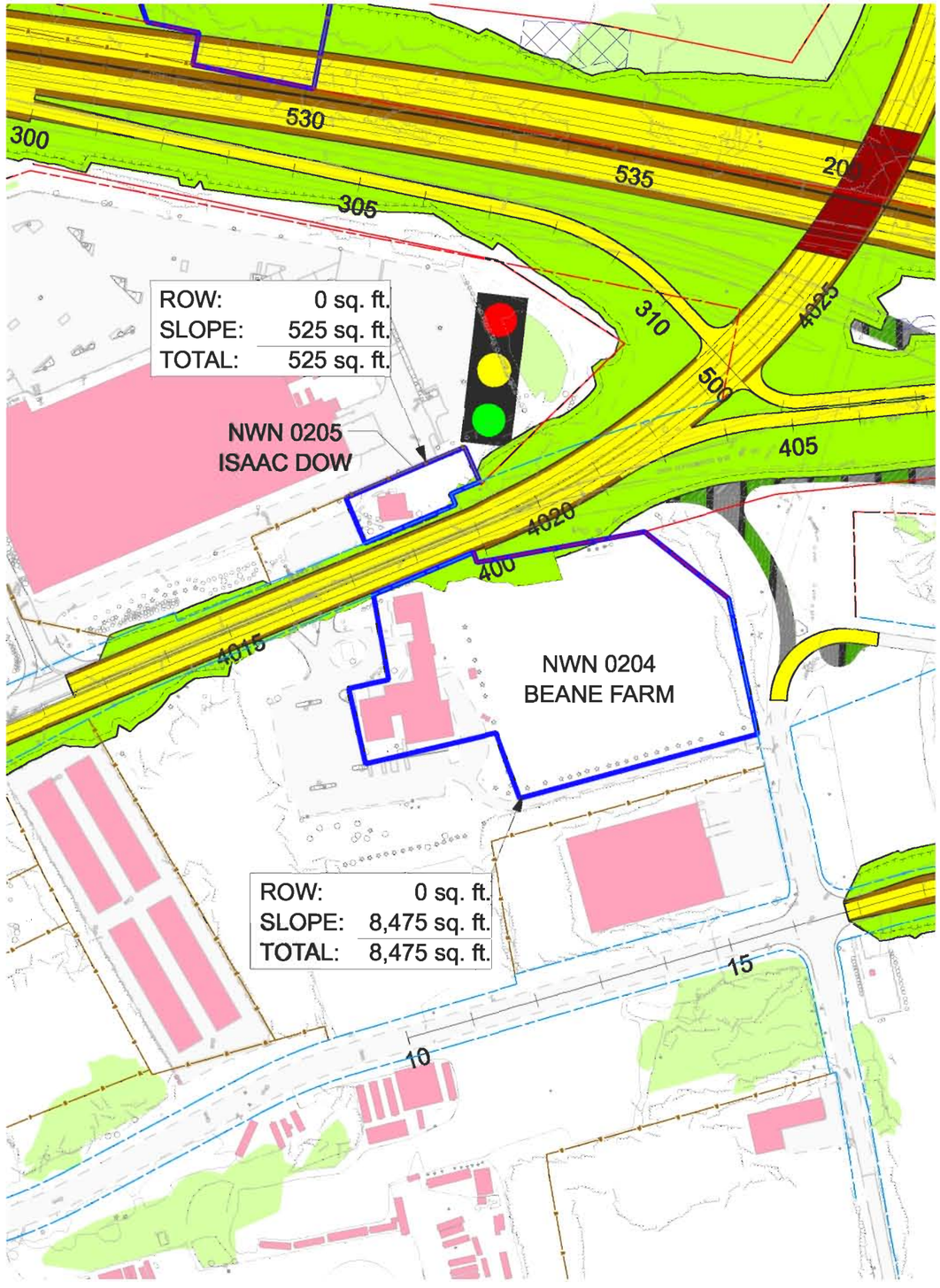
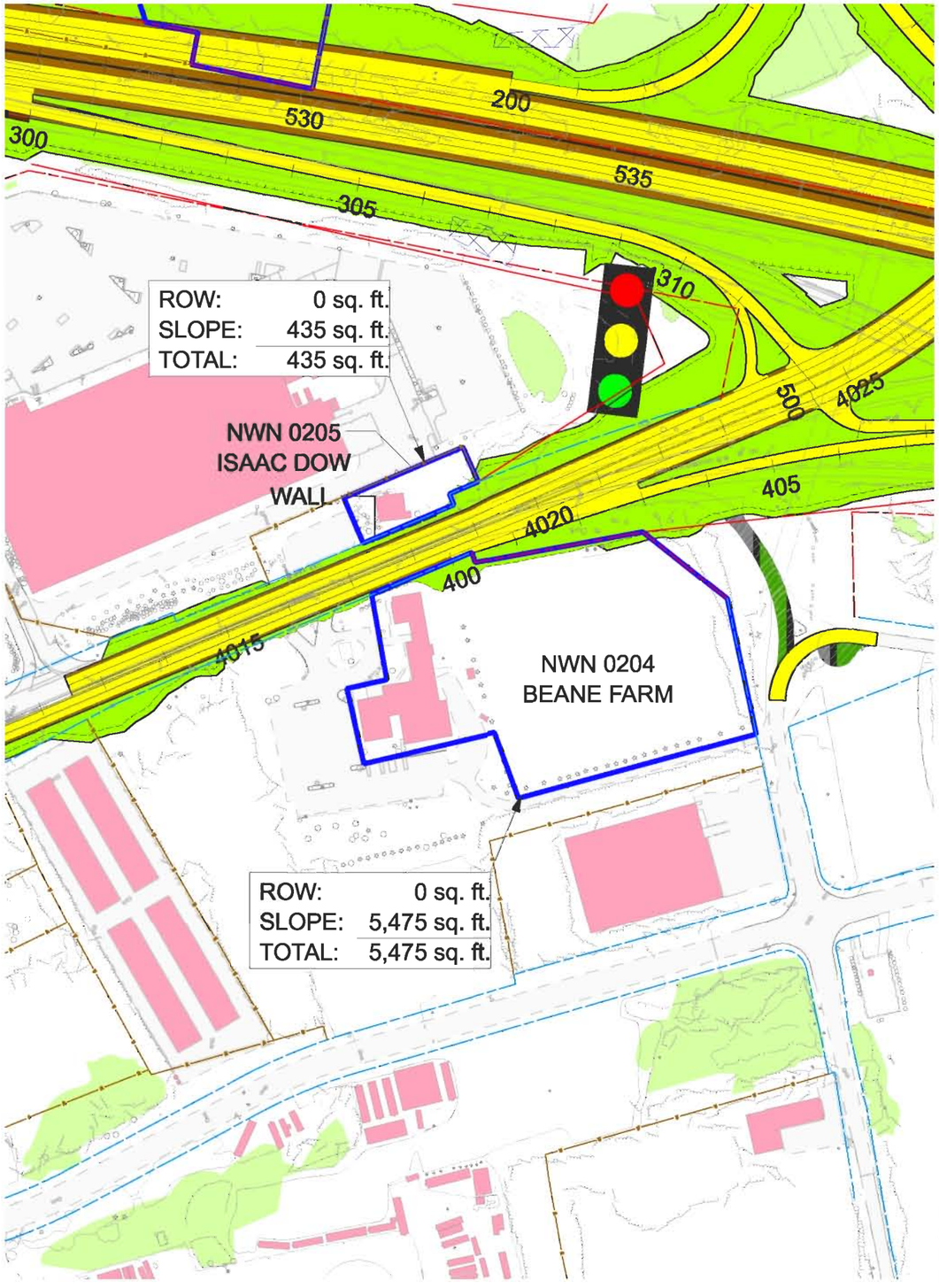
NEWINGTON ALTERNATIVE 12A



NEWINGTON ALTERNATIVE 13



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Historic Structure (Listed or Eligible for Listing)

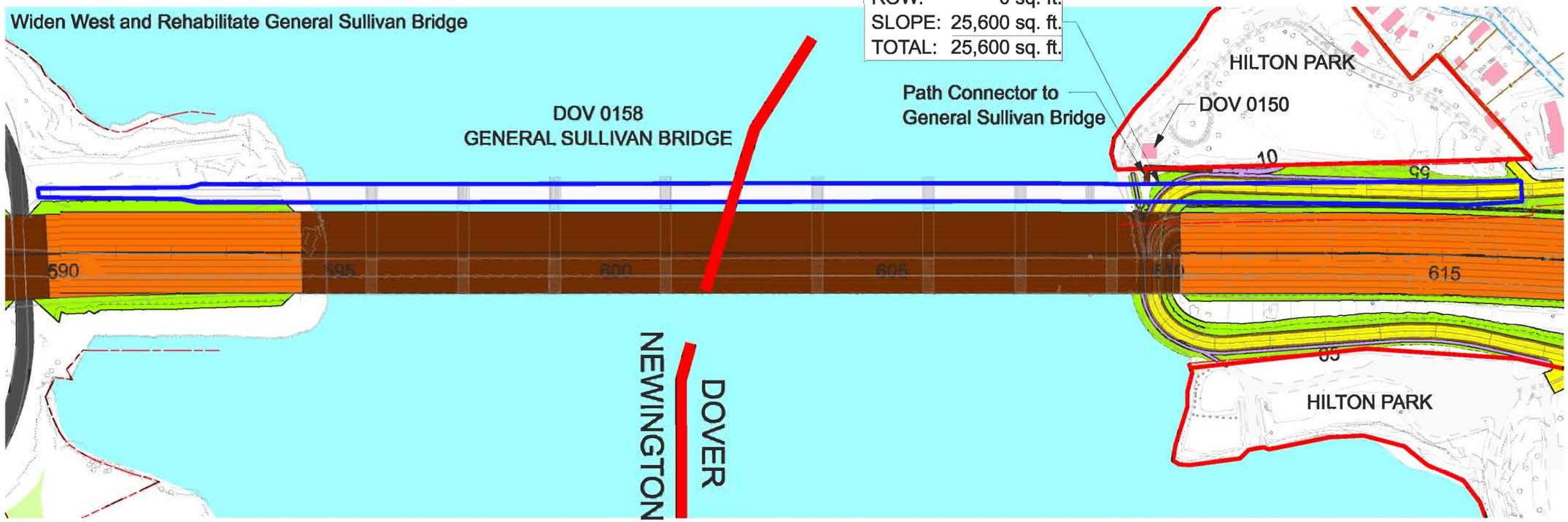
0 100 200 Feet

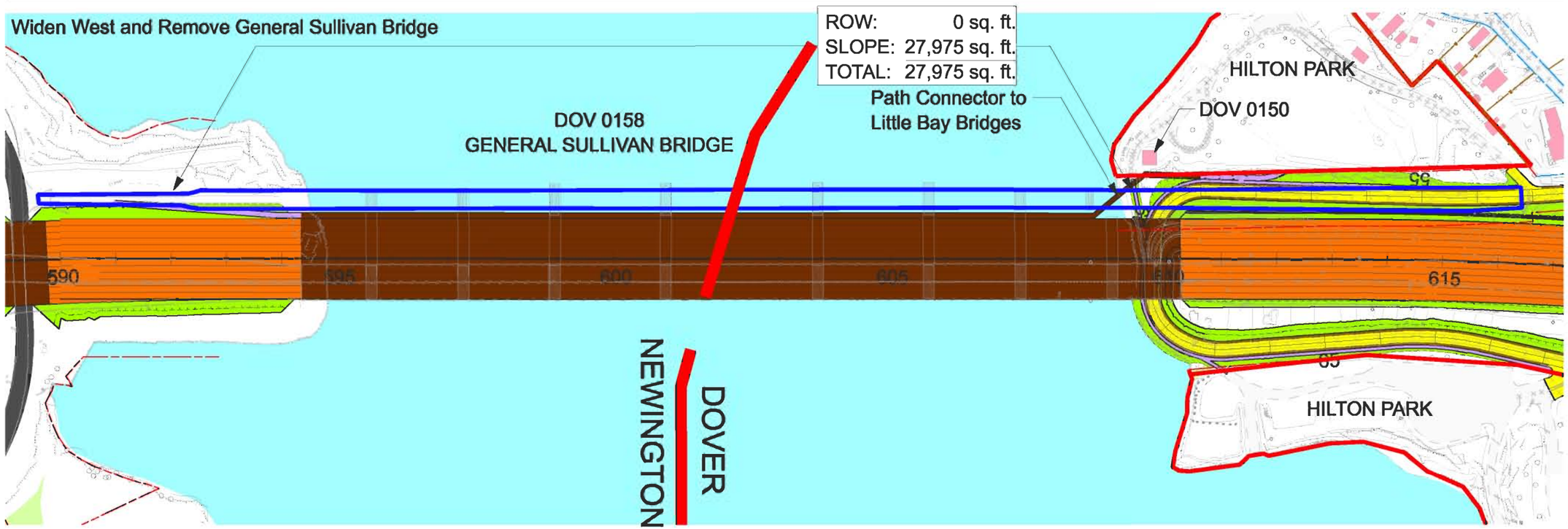
Vanasse Hangen Brustlin, Inc.

Figure 5.4-2
Section 4(f) Impacts
NWN 0204, NWN 0205
Newington

* Newington Alternative 10A and 12A have Similar Configurations.

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig050402.dgn





New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Sidewalk
- Proposed Acquisition
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Historic Structure (Listed or Eligible for Listing)
- Park Boundary

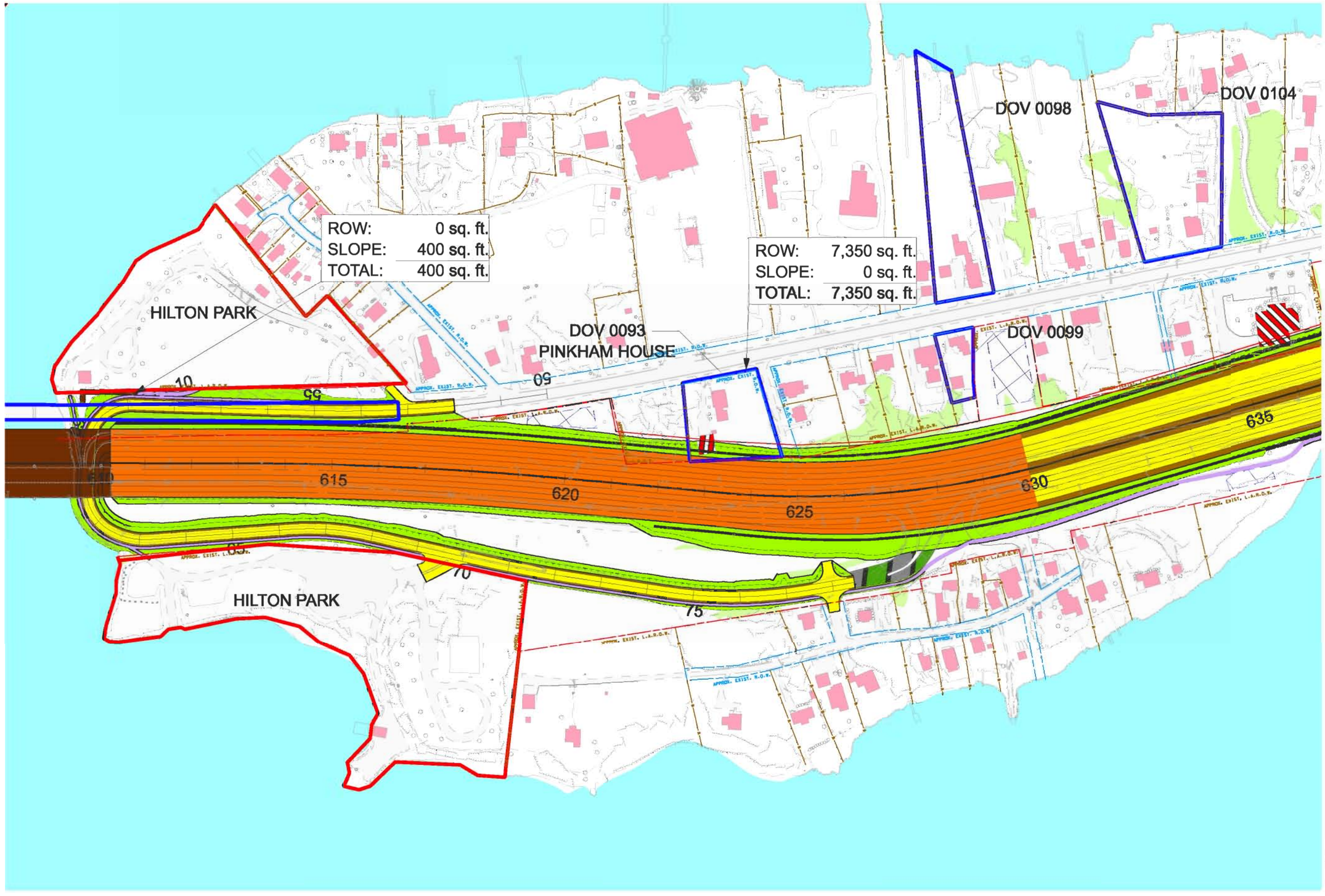
0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 5.4-3
Section 4(f) Impacts
DOV 0158
General Sullivan Bridge, Dover

* Newington Alternatives 10A, 12A and 13 have Similar Configurations.
Dover Alternatives 2 and 3 have Similar Configurations.

Date Created: 7/12/2006 j:\51425\cad\te\phase3\DEIS\fig050403.dgn



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Historic Structure (Listed or Eligible for Listing)
- Park Boundary

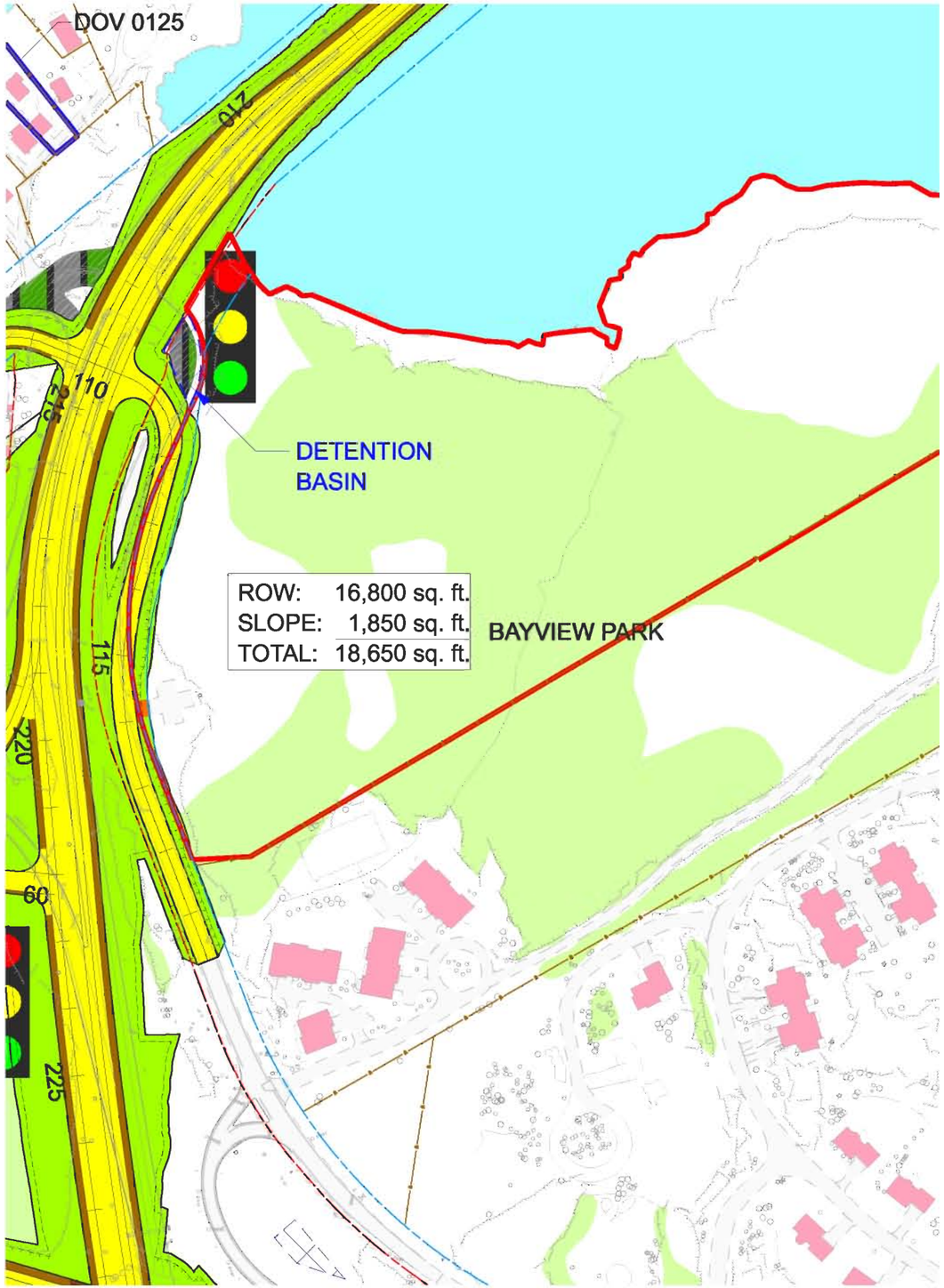
0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

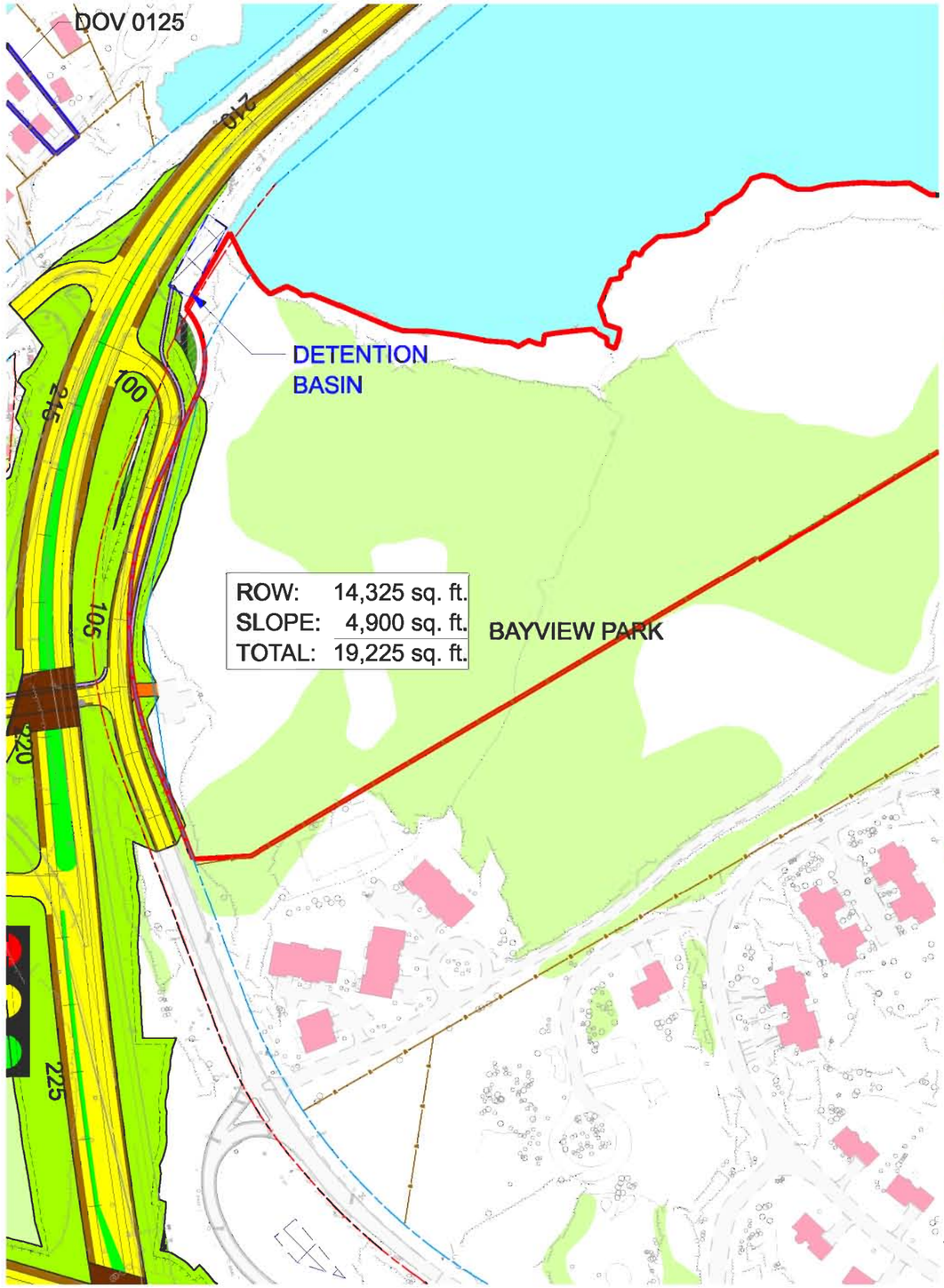
Figure 5.4-4
Section 4(f) Impacts
Hilton Park, DOV 0093
Dover

* Dover Alternatives 2 and 3 have Similar Configurations.

DOVER ALTERNATIVE 2



DOVER ALTERNATIVE 3



New Hampshire DOT
Department of Transportation

Legend:

- Existing Roadway
- Existing Building
- Existing Wetland
- Existing Property Lines
- Proposed Roadway
- Proposed Bridge
- Proposed Rail Corridor
- Proposed Acquisition
- Pavement Removal
- Existing LAROW
- Existing CAROW
- Existing ROW
- Proposed LAROW
- Proposed CAROW
- Proposed ROW
- Historic Structure (Listed or Eligible for Listing)
- Park Boundary

0 100 200 Feet

Vanasse Hangen Brustlin, Inc.

Figure 5.4-5
Section 4(f) Impacts
Bayview Park
Dover

VHB Vanasse Hangen Brustlin, Inc.